BCD996XT

- Important information
  - General Precautions
  - Specifications
  - FCC Information
  - Warranty and Support Information
  - User Guide Information
- Operation overview
- Setting up the hardware
- Programming your scanner
- Operating your scanner

Important information

For general information about using a scanner, including how to program the various types of radio systems into your scanner, we suggest you start with the General Users Guide page.

General Precautions

Specifications

- Hardware specifications
- Software reference <NOT YET AVAILABLE>

FCC Information

Warranty and Support Information

User Guide Information

Operation overview

- Available operation modes
- Menu reference
- Keys and their functions
- Reading the display

Setting up the hardware

- Included with the scanner
- Installing the batteries
- Connecting the antenna

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Programming your scanner

- Setting up systems
- Programming Number Tags
- Programming Quick Keys
- Programming Search Keys
- Programming locations
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Operating your scanner

- Using Number Tags
- Using Quick Keys, Startup Keys, and Search Keys
- Using Tone Out mode
- Using Close Call mode
- Using Band Scope mode
- Using GPS mode

This page applies to the following scanner(s): BCD996XT Users Guide

Conventional Systems

> Please note that these pages are meant as general instructions. While most of the information here applies to all scanners, some options may not be available on certain scanner models. Model-specific options are indicated in the text.

Since a conventional system is really a collection of frequencies, the first thing you need to know is the frequency for each channel you want to program. Here is an example of a conventional system frequency list from RadioReference:

Skywarn

Frequency	Input	License	Type	Tone	Alpha Tag	Description	Mode	Tag
146.94000	146.34000	K5FTW-R	RM	110.9 PL	TC RACES Pri	Tarrant County RACES/Skywarn Primary	FM	Ham
146.76000	146.16000	K5FTW-R	RM	110.9 PL	TC RACES B/U	Tarrant County RACES/Skywarn Backup	FM	Ham
444.10000	449.10000	K5FTW-R	RM	110.9 PL	TC RACES Adm	Tarrant County Backup / Admin / Secondary Net Freq.	FM	Ham
224.94000	223.34000	K5FTW-R	RM	110.9 PL	TC RACES Int	Tarrant County Admin Freq. / WX Service Intercom Freq.	FM	Ham

Conventional System

- Here is a conceptual layout diagram of a basic conventional system. (Click here for a legend of the diagram.)
- You can download a planning worksheet for conventional systems as a pdf file or an Excel spreadsheet file.

- Programming a Conventional System
  - Create a system
    - System properties
  - Create at least 1 channel group
    - Channel group properties
  - Create at least 1 channel in each group
    - Channel properties

Programming a Conventional System

To program a conventional system, you'll need to program the required elements in following order (click here for information on using the menu):

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *Conventional* .
3. When the scanner prompts you confirm, tap **YES** .
4. The scanner creates the system with a default name. Select Edit Name if you want to change it.
5. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

All of these options can be found under your scanner's Program System menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name

Required	
None	
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Quick key	Set Quick Key
Optional	
Automatic Gain Control (AGC)	BCD396XT and BCD996XT: Set Audio AGC BC346XT and BCT15X: Not available
Delay time	Set Delay Time
Hold time	Set Hold Time
Lockout	Set Lockout
P25 wait time	BCD396XT and BCD996XT: P25 Waiting Time BC346XT and BCT15X: Not available
Startup key	Set Startup Key
Available operations	
Copy a system	Copy System
Delete a system	Delete System

Create at least 1 channel group

Each conventional system can contain up to 20 channel groups, and all systems must contain at least 1 channel group.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Group menu and select *New Group* .
3. If you need to change any of the channel group properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel group properties

All of these options can be found by selecting the group name under your scanner's Edit Group menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	

Name	Edit Name
Quick key	Set Quick Key
Optional	
Location information	Set Location Info
Lockout	Set Lockout
Available operations	
Delete a group	Delete Group

Create at least 1 channel in each group

Each conventional system can contain up to 1000 channels in each group, and all groups must contain at least 1 channel.

1. On the Edit Group menu, select the channel group you just created.
2. Go to the Edit Channel menu and select *New Channel* .
3. Input the frequency for this channel in MHz.
4. If you need to change any of the channel properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel properties

(All of these options can be found by selecting the channel name your scanner's Edit Channel menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

Property	Option name
Required	
Frequency	Edit Frequency
Recommended	
Analog/digital	BCD396XT and BCD996XT: Set Audio Type BC346XT and BCT15X: Not available
• CTCSS/DCS	Set CTCSS/DCS (BCD396XT: analog channels only)
• P25 Network Address (NAC)	BCD396XT and BCD996XT: P25 NAC Option (digital channels only) BC346XT and BCT15X: Not available
Modulation	Set Modulation

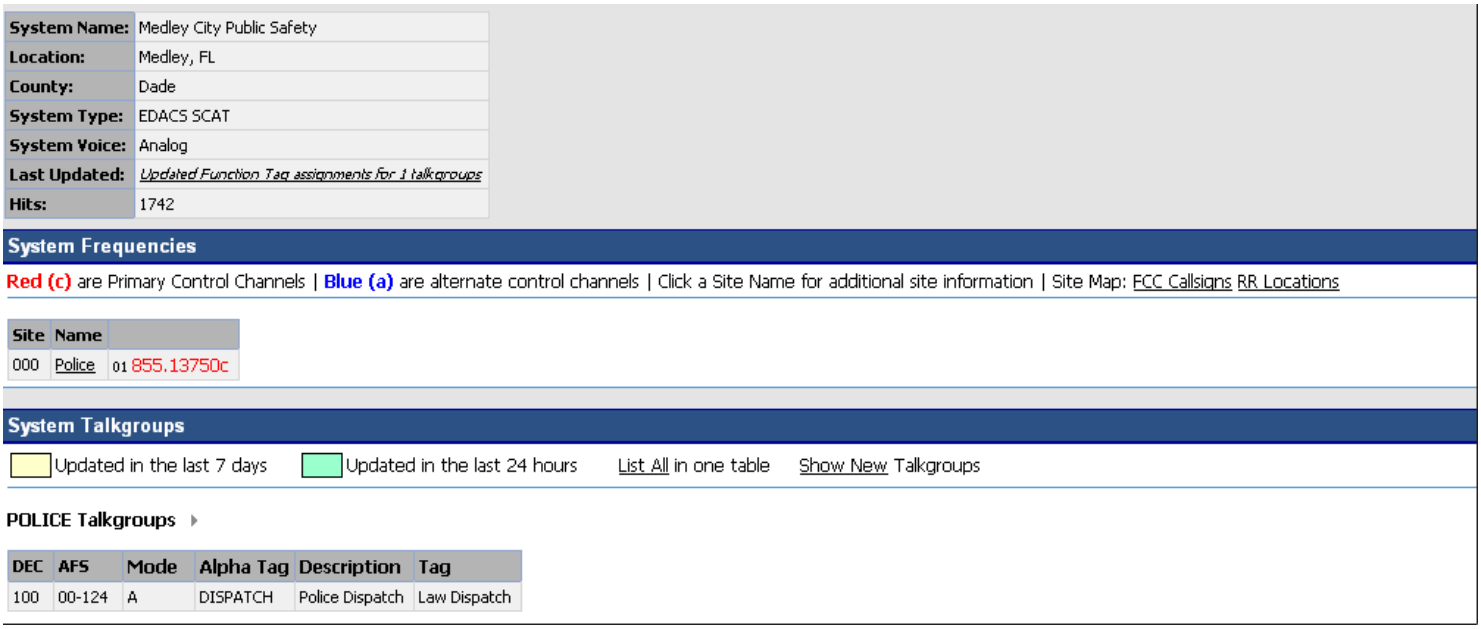
Name	Edit Name
Number tag	Set Number Tag
Optional	
Alert	Set Alert
Attenuator	Set Attenuator
Lockout	Set Lockout
Priority	Set Priority
Volume Offset	Volume Offset
Available operations	
Copy a channel	Copy Channel
Delete a channel	Delete Channel

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT UsersGuide

EDACS SCAT Systems

Please note that these pages are meant as general instructions. While most of the information here applies to all scanners, some options may not be available on certain scanner models. Model-specific options are indicated in the text.

This section deals with EDACS SCAT systems. Click here for information on EDACS Wide and Narrow systems. Below is an example of an EDACS SCAT system from RadioReference:



System Name:	Medley City Public Safety
Location:	Medley, FL
County:	Dade
System Type:	EDACS SCAT
System Voice:	Analog
Last Updated:	*Updated Function Tag assignments for 1 talkgroups*
Hits:	1742

System Frequencies

Red (c) are Primary Control Channels | **Blue (a)** are alternate control channels | Click a Site Name for additional site information | Site Map: FCC Callsigns RR Locations

Site	Name	
000	Police	01 855.13750c

System Talkgroups

Updated in the last 7 days Updated in the last 24 hours List All in one table Show New Talkgroups

POLICE Talkgroups

DEC	AFS	Mode	Alpha Tag	Description	Tag
100	00-124	A	DISPATCH	Police Dispatch	Law Dispatch

150 px

And here is a conceptual layout diagram of a basic EDACS SCAT system. (Click here for a legend of the diagram.)

- Programming an EDACS SCAT System
  - Create a system
    - System properties
  - Create a site
    - Site properties
  - Create at least 1 frequency
    - Frequency properties

Programming an EDACS SCAT System

To program an EDACS SCAT system, you'll need to program the required elements in following order (click here for information on using the menu):

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *EDCS* .
3. The scanner will prompt you for the sub-type. Select *SCAT* .
4. When the scanner prompts you confirm, tap **YES** .
5. The scanner creates the system with a default name. Select Edit Name if you want to change it.
6. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

All of these options can be found under your scanner's Program System menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	

Name	Edit Name
Number tag	Set Number Tag
Optional	
Automatic Gain Control (AGC)	BCD396XT or BCD996XT: Set Audio AGC BC346XT or BCT15: Not available
Delay time	Set Delay Time
Available operations	
Copy a system	Copy System
Delete a system	Delete System

Create a site

Each EDACS SCAT system must contain exactly 1 site.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Site menu.
3. If you need to change any of the site properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Site properties

All of these options can be found under your scanner's Edit Site menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Quick key	Set Quick Key
Optional	
Attenuator	Set Attenuator
Hold time	Set Hold Time
Location information	Set Location Info
Lockout	Set Lockout
Modulation	Set Modulation
Startup key	Set Startup Key
Available operations	
None	

Create at least 1 frequency

Each EDACS SCAT system must contain at least 1 frequency in its site.

1. Open the Edit Site menu.
2. Go to the Set Frequencies sub-menu and select *New Frequency* .
3. Enter at least 1 frequency for this site.
4. If you need to change any of the frequency properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Frequency properties

All of these options can be found by selecting the frequency under the Set Frequencies sub-menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Number tag	Set Number Tag
Optional	
Lockout	Set Lockout
Available operations	
Delete a frequency	Delete Frequency

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

EDACS Trunked Systems

> Please note that these pages are meant as general instructions. While most of the information here applies to all scanners, some options may not be available on certain scanner models. Model-specific options are indicated in the text.

This section deals with EDACS Wide or standard systems. Click here for information on EDACS SCAT systems. This includes EDACS systems that use ESK. No special setting is needed to enable ESK tracking on an EDACS system. Note that the scanner cannot decode EDACS ProVoice. Below is an example of an EDACS trunked system from RadioReference:

System Name:	Irving Public Safety System
Location:	Irving, TX
County	Dallas
System Type:	EDACS Standard
System Voice:	Analog
Last Updated:	11-08-2007 03:40

System Frequencies

Red* are Primary Control Channels Blue* are Secondary Control Channels

Site	Description							
001	Primary	01-868.53750*	02-868.08750	03-868.58750	04-855.46250	05-868.63750	06-857.21250	07-868.73750
		08-868.83750	09-866.58750	10-868.91250				

EDACS Wide System

- Here is a conceptual layout diagram of a basic EDACS Wide system. (Click here for a legend of the diagram.)
- You can download a planning worksheet for EDACS systems as a pdf file or an Excel spreadsheet file.

- Programming an EDACS System
  - Create a system
    - System properties
  - Create at least 1 site
    - Site properties
  - Create at least 1 frequency in each site
    - Frequency properties
- Programming a system for Scanning
  - Create at least 1 channel group
    - Channel group properties
  - Create at least 1 channel in each group
    - Channel properties

Programming an EDACS System

To program an EDACS system, you'll need to program the required elements in following order (click here for information on using the menu):

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *EDCS* .
3. The scanner will prompt you for the sub-type. Select *Wide/Narrow* .
4. When the scanner prompts you confirm, tap **YES** .
5. The scanner creates the system with a default name. Select Edit Name if you want to change it.
6. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

All of these options can be found under your scanner's Program System menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Optional	
Automatic Gain Control (AGC)	BCD396XT and BCD996XT: Set Audio AGC BC346XT and BCT15X: Not available
Delay time	Set Delay Time
Emergency alert	Emergency Alert
ID format	Set ID Format (AFS) or (DEC)

ID scan/search	ID Scan/Search
Priority ID scan	Priority ID scan
Available operations	
Copy a system	Copy System
Delete a system	Delete System
Review locked-out IDs	Rvw ID:Srch L/O
Clear all locked-out IDs	Clr All L/O IDs

Create at least 1 site

Each EDACS system can contain up to 256 sites, and all systems must contain at least 1 site.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Site menu and select *New Site* .
3. If you need to change any of the site properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Site properties

All of these options can be found under your scanner's Edit Site menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
Site type	Set Site Type
Recommended	
Name	Edit Name
Quick key	Set Quick Key
Optional	
Attenuator	Set Attenuator

Hold time	Set Hold Time
Location information	Set Location Info
Lockout	Set Lockout
Modulation	Set Modulation
Startup key	Set Startup Key
Available operations	
Delete a site	Delete Site

Create at least 1 frequency in each site

Each trunked system can contain up to 23 frequencies in each site, and all sites must contain at least 1 frequency.

1. On the Edit Site menu, select the site you just created.
2. Go to the Set Frequencies sub-menu and select *New Frequency* .
3. Enter at least 1 frequency for this site.
4. When you enter a new frequency, the scanner will prompt you for the logical channel number or *LCN* for that frequency. Enter a number from 1 through 30.
5. If you need to change any of the frequency properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Frequency properties

All of these options can be found by selecting the frequency under the Set Frequencies sub-menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
Logical channel number	Input LCN
Recommended	
None	

Optional	
Lockout	Set Lockout
Available operations	
Delete a frequency	Delete Frequency

Programming a system for Scanning

Once you create the system and at least 1 site, you can Search the system with no problems. However, if you want to Scan the system, you'll need to program the required elements in following order (click here for information on using the menu):

Create at least 1 channel group

Each EDACS system can contain up to 20 channel groups, and any system you want to scan must contain at least 1 channel group.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Group menu and select *New Group* .
3. If you need to change any of the channel group properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel group properties

All of these options can be found by selecting the group name under your scanner's Edit Group menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Quick key	Set Quick Key

Optional	
Location information	Set Location Info
Lockout	Set Lockout
Available operations	
Delete a group	Delete Group

Create at least 1 channel in each group

Each trunked system can contain up to 500 channels in each group, and all groups must contain at least 1 channel.

1. On the Edit Group menu, select the channel group you just created.
2. Go to the Edit Channel menu and select *New Channel* .
3. Input the Talk Group ID (TGID) for this channel.
4. If you need to change any of the channel properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel properties

All of these options can be found by selecting the channel name your scanner's Edit Channel menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
TGID	Edit Talk Group ID
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Optional	
Alert	Set Alert

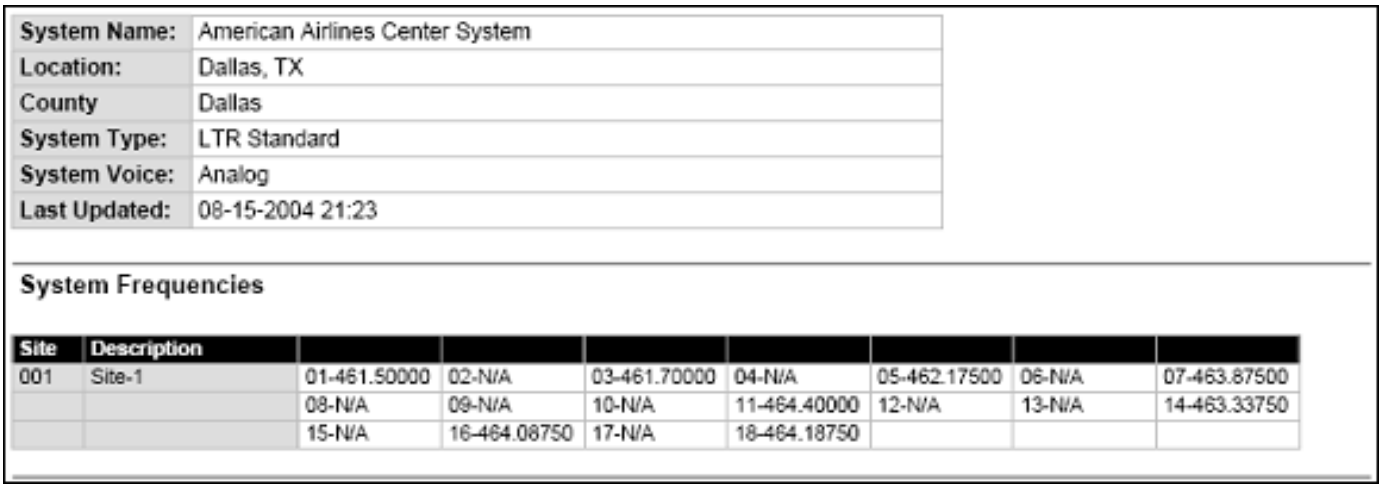
Lockout	Set Lockout
Priority	Set Priority
Volume Offset	Volume Offset
Available operations	
Copy a channel	Copy Channel
Delete a channel	Delete Channel

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT UsersGuide

LTR Trunked Systems

> Please note that these pages are meant as general instructions. While most of the information here applies to all scanners, some options may not be available on certain scanner models. Model-specific options are indicated in the text.

Below is an example of an Logic Trunked Radio or *LTR* system from RadioReference:



System Name:	American Airlines Center System
Location:	Dallas, TX
County	Dallas
System Type:	LTR Standard
System Voice:	Analog
Last Updated:	08-15-2004 21:23

System Frequencies

Site	Description							
001	Site-1	01-461.50000	02-N/A	03-461.70000	04-N/A	05-462.17500	06-N/A	07-463.87500
		08-N/A	09-N/A	10-N/A	11-464.40000	12-N/A	13-N/A	14-463.33750
		15-N/A	16-464.08750	17-N/A	18-464.18750			

LTR System

- Here is a conceptual layout diagram of a basic LTR system. (Click here for a legend of the diagram.)
- You can download a planning worksheet for LTR systems as a pdf file or an Excel spreadsheet file.
- For more information on the different types of LTR systems and how they work, see the Logic Trunked Radio page at Radio Reference's Wiki.

- Programming an LTR System
  - Create a system
    - System properties
  - Create at least 1 site
    - Site properties
  - Create at least 1 frequency in each site
    - Frequency properties
- Programming a system for Scanning
  - Create at least 1 channel group
    - Channel group properties
  - Create at least 1 channel in each group
    - Channel properties

Programming an LTR System

To program an LTR system, you'll need to program the required elements in following order (click here for information on using the menu):

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *LT* .
3. When the scanner prompts you confirm, tap **YES** .
4. The scanner creates the system with a default name. Select Edit Name if you want to change it.
5. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

All of these options can be found under your scanner's Program System menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Optional	
Automatic Gain Control (AGC)	BCD396XT and BCD996XT: Set Audio AGC
	BC346XT and BCT15X: Not available
Delay time	Set Delay Time
ID scan/search	ID Scan/Search
Priority ID scan	Priority ID scan

Available operations	
Copy a system	Copy System
Delete a system	Delete System
Review locked-out IDs	Rvw ID:Srch L/O
Clear all locked-out IDs	Clr All L/O IDs

Create at least 1 site

Each LTR system can contain up to 256 sites, and all systems must contain at least 1 site.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Site menu and select *New Site* .
3. If you need to change any of the site properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Site properties

All of these options can be found under your scanner's Edit Site menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Quick key	Set Quick Key
Optional	
Attenuator	Set Attenuator
Hold time	Set Hold Time

Location information	Set Location Info
Lockout	Set Lockout
Modulation	Set Modulation
Startup key	Set Startup Key
Available operations	
Delete a site	Delete Site

Create at least 1 frequency in each site

Each LTR system can contain up to 20 frequencies in each site, and all sites must contain at least 1 frequency.

1. On the Edit Site menu, select the site you just created.
2. Go to the Set Frequencies sub-menu and select *New Frequency* .
3. Enter at least 1 frequency for this site.
4. When you enter a new frequency, the scanner will prompt you for the logical channel number or *LCN* for that frequency. Enter a number from 1 through 20.
5. If you need to change any of the frequency properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Frequency properties

All of these options can be found by selecting the frequency under the Set Frequencies sub-menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
Logical channel number	Input LCN
Recommended	
None	
Optional	

Lockout	Set Lockout
Available operations	
Delete a frequency	Delete Frequency

Programming a system for Scanning

Once you create the system and at least 1 site, you can Search the system with no problems. However, if you want to Scan the system, you'll need to program the required elements in following order (click here for information on using the menu):

Create at least 1 channel group

Each LTR system can contain up to 20 channel groups, and any system you want to scan must contain at least 1 channel group.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Group menu and select *New Group* .
3. If you need to change any of the channel group properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel group properties

All of these options can be found by selecting the group name under your scanner's Edit Group menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Quick key	Set Quick Key
Optional	

Location information	Set Location Info
Lockout	Set Lockout
Available operations	
Delete a group	Delete Group

Create at least 1 channel in each group

Each trunked system can contain up to 500 channels in each group, and all groups must contain at least 1 channel.

1. On the Edit Group menu, select the channel group you just created.
2. Go to the Edit Channel menu and select *New Channel* .
3. Input the Talk Group ID (TGID) for this channel.
4. If you need to change any of the channel properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel properties

All of these options can be found by selecting the channel name your scanner's Edit Channel menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
TGID	Edit Talk Group ID
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Optional	
Alert	Set Alert
Lockout	Set Lockout

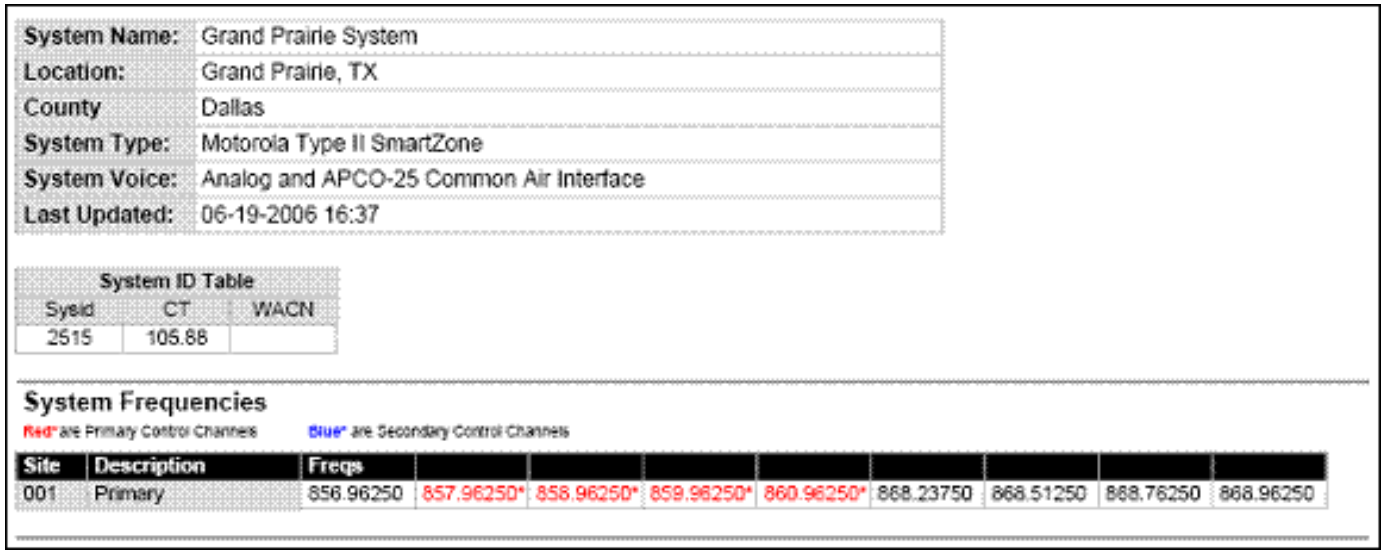
Priority	Set Priority
Volume Offset	Volume Offset
Available operations	
Copy a channel	Copy Channel
Delete a channel	Delete Channel

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Motorola Trunked Systems

> Please note that these pages are meant as general instructions. While most of the information here applies to all scanners, some options may not be available on certain scanner models. Model-specific options are indicated in the text.

A Motorola system can be an 800 MHz, 400 MHz (UHF), or 100-200 MHz (VHF) system. Below are some examples of these Motorola systems from RadioReference:



System Name:	Grand Prairie System
Location:	Grand Prairie, TX
County	Dallas
System Type:	Motorola Type II SmartZone
System Voice:	Analog and APCO-25 Common Air Interface
Last Updated:	06-19-2006 16:37

System ID Table

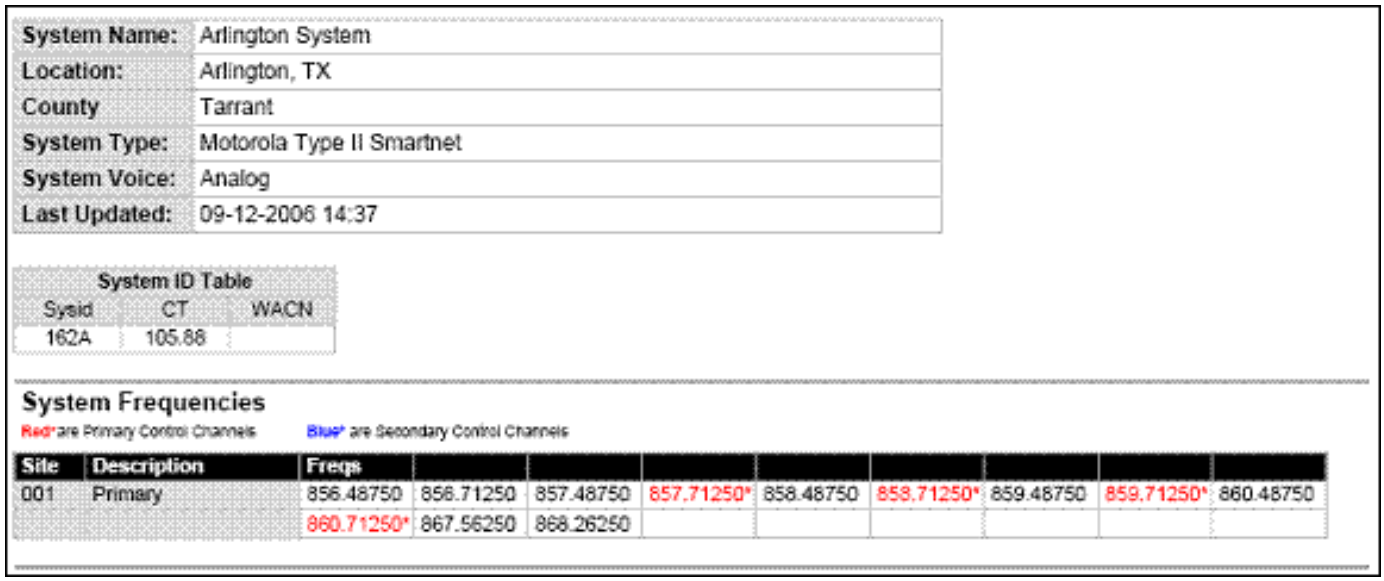
Sysid	CT	WACN
2515	105.88	

System Frequencies

Red* are Primary Control Channels Blue* are Secondary Control Channels

Site	Description	Freqs								
001	Primary	856.96250	857.96250*	858.96250*	859.96250*	860.96250*	868.23750	868.51250	868.76250	868.96250

Motorola 800 MHz System



System Name:	Arlington System
Location:	Arlington, TX
County	Tarrant
System Type:	Motorola Type II Smartnet
System Voice:	Analog
Last Updated:	09-12-2006 14:37

System ID Table

Sysid	CT	WACN
162A	105.88	

System Frequencies

Red* are Primary Control Channels Blue* are Secondary Control Channels

Site	Description	Freqs								
001	Primary	856.48750	856.71250	857.48750	857.71250*	858.48750	858.71250*	859.48750	859.71250*	860.48750
		860.71250*	867.56250	868.26250						

Another Motorola 800 MHz System

- Even though some (or all) of the System Voice channels are APCO 25, this system, and others like it, is correctly programmed as a Motorola 800 MHz system, per the information given for

the System Type.

System Name:	United Parcel Service (DFW Airport) System
Location:	DFW Airport, TX
County	2 counties
System Type:	Motorola Type II Smartnet
System Voice:	Analog
Last Updated:	06-04-2007 18:42

System ID Table

Sysid	CT	WACN
7507	116.13	

Custom Frequency Table

Base	Spacing	Offset
461.5000	380	12.5
451.0000	560	12.5

System Frequencies

Red* are Primary Control Channels Blue* are Secondary Control Channels

Site	Description	Freqs								
001	Primary	451.31250	451.66250	451.88750	452.03750	452.53750	452.68750*	452.88750*	462.18750*	462.48750*

Motorola UHF System (400 MHz band)

System Name:	Staffordshire Fire & Rescue System
Location:	Staffordshire, EN
County	Staffordshire
System Type:	Motorola Type II Smartnet
System Voice:	Analog
Last Updated:	02-01-2008 11:17

System ID Table

Sysid	CT	WACN
1533		

Custom Frequency Table

Base	Spacing	Offset
152.0000	380	12.5
154.0000	461	12.5

System Frequencies

Red* are Primary Control Channels Blue* are Secondary Control Channels

Site	Description	Freqs								
001	North Simulcast	153.82500	154.08750	154.72500	154.88750	155.07500	155.30000	155.41250*	155.43750	155.56250
		155.61250								
002	South Simulcast	152.15000*	152.26250	152.31250	152.53750	152.82500	155.21250	155.52500	155.55000	155.87500
006	Site-6	152.83750	154.08750	154.72500	154.88750	155.07500	155.30000	155.41250*	155.43750	155.56250
		155.81250								
011	Site-11	152.02500*	154.57500	154.75000						

Motorola VHF System (100-200 MHz band)

- Here is a conceptual layout diagram of a basic Motorola system. (Click here for a legend of the diagram.)
- You can download a planning worksheet for Motorola systems as a pdf file or an Excel spreadsheet file.
- For more information on the different types of Motorola systems and how they work, see the Motorola page at Radio Reference's Wiki.

- Programming a Motorola System
  - Create a system
    - System properties
  - Create at least 1 site
    - Site properties
  - Create at least 1 frequency in each site
    - Frequency properties
- Programming a system for Scanning
  - Create at least 1 channel group
    - Channel group properties
  - Create at least 1 channel in each group
    - Channel properties

Programming a Motorola System

To program a Motorola system, you'll need to program the required elements in following order:

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *MOT* .
3. When the scanner prompts you confirm, tap **YES** .
4. The scanner creates the system with a default name. Select Edit Name if you want to change it.
5. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

All of these options can be found under your scanner's Program System menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	

Fleet map	Edit Fleet Map (Required for Motorola Type I or Type I/II Hybrid systems only)
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Optional	
Automatic Gain Control (AGC)	BCD396XT and BCD996XT: Set Audio AGC
	BC346XT and BCT15X: Not available
Delay time	Set Delay Time
Emergency alert	Emergency Alert
ID format	Set ID Format (DEC/HEX) or (AFS/DEC)
ID scan/search	ID Scan/Search
Priority ID scan	Priority ID scan
Status bit	Set Status bit
Available operations	
Copy a system	Copy System
Delete a system	Delete System
Review locked-out IDs	Rvw ID:Srch L/O
Clear all locked-out IDs	Clr All L/O IDs

Create at least 1 site

Each Motorola system can contain up to 256 sites, and all systems must contain at least 1 site.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Site menu and select *New Site* .
3. If you need to change any of the site properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Site properties

All of these options can be found under your scanner's Edit Site menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
Band plan	Edit Band Plan
Recommended	

Name	Edit Name
Quick key	Set Quick Key
Optional	
Attenuator	Set Attenuator
Control channel only	Set C-Ch Only
Hold time	Set Hold Time
Location information	Set LocationInfo
Lockout	Set Lockout
Modulation	Set Modulation
P25 wait time	BCD396XT and BCD996XT: P25 Waiting Time
	BC346XT and BCT15X: Not available
Startup key	Set Startup Key
Available operations	
Delete a site	Delete Site

Create at least 1 frequency in each site

Each trunked system can contain up to 30 frequencies in each site, and all sites must contain at least 1 frequency.

1. On the Edit Site menu, select the site you just created.
2. Go to the Set Frequencies sub-menu and select *New Frequency* .
3. Enter at least 1 frequency for this site.
4. If you need to change any of the frequency properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Frequency properties

All of these options can be found by selecting the frequency under the Set Frequencies sub-menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	

None	
Optional	
Lockout	Set Lockout
Available operations	
Delete a frequency	Delete Frequency

Programming a system for Scanning

Once you create the system and at least 1 site, you can Search the system with no problems. However, if you want to Scan the system, you'll need to program the required elements in following order:

Create at least 1 channel group

Each Motorola system can contain up to 20 channel groups, and any system you want to scan must contain at least 1 channel group.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Group menu and select *New Group* .
3. If you need to change any of the channel group properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel group properties

(All of these options can be found by selecting the group name under the Edit Group menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

Required	None
Recommended	Name (Edit Name)
	Quick key (Set Quick Key)
Optional	Location information (Set LocationInfo)
	Lockout (Set Lockout)

Available operations	Delete Group

Create at least 1 channel in each group

Each trunked system can contain up to 500 channels in each group, and all groups must contain at least 1 channel.

1. On the Edit Group menu, select the channel group you just created.
2. Go to the Edit Channel menu and select *New Channel* .
3. Input the Talk Group ID (TGID) for this channel.
4. If you need to change any of the channel properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel properties

(All of these options can be found by selecting the channel name under the Edit Channel menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

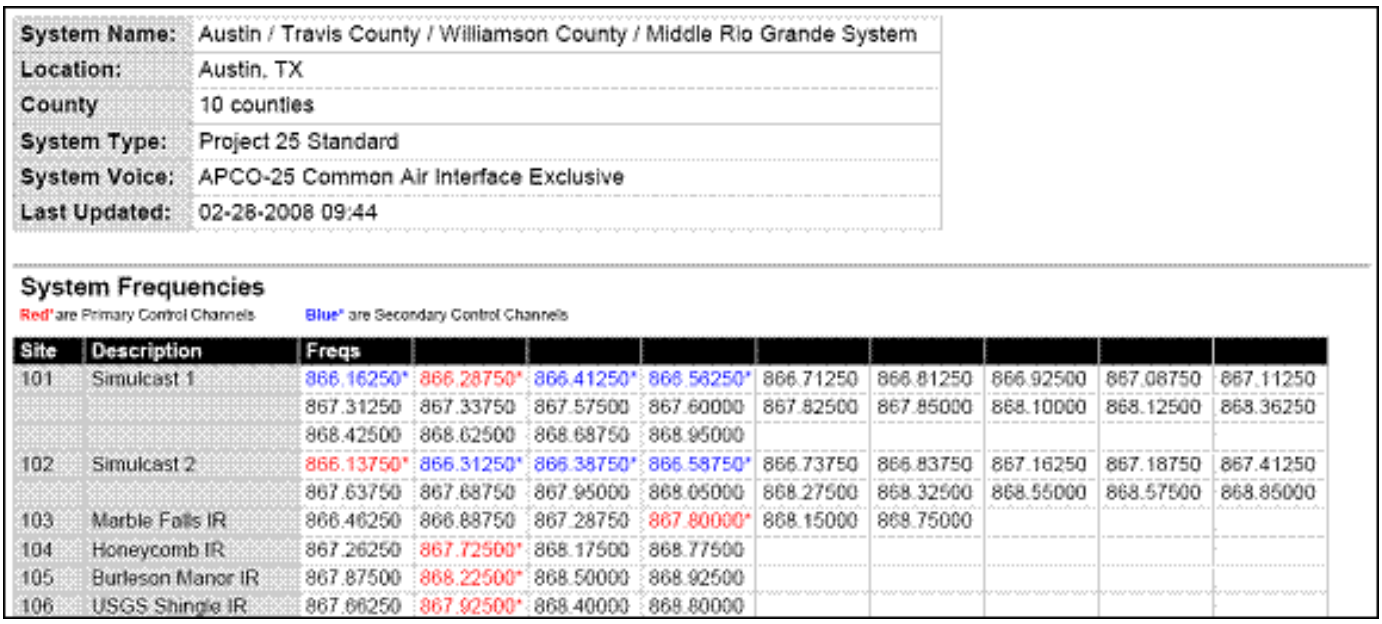
Required	TGID (Edit Talk Group ID)
Recommended	Audio type (Analog or digital) (BCD396XT and BCD996XT only) (Set Audio Type)
	Name (Edit Name)
	Number tag (Set Number Tag)
Optional	Alert (Set Alert)
	Lockout (Set Lockout)
	Priority (Set Priority)
	Volume Offset
Available operations	Copy Channel
	Delete Channel

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Standard P25 Trunked Systems

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

This section deals with standard Project 25 or *P25* systems. Click here for information on P25 one-frequency systems. Below is an example of a standard P25 system from RadioReference:



System Name:	Austin / Travis County / Williamson County / Middle Rio Grande System
Location:	Austin, TX
County	10 counties
System Type:	Project 25 Standard
System Voice:	APCO-25 Common Air Interface Exclusive
Last Updated:	02-28-2008 09:44

System Frequencies

Red* are Primary Control Channels Blue* are Secondary Control Channels

Site	Description	Freqs								
101	Simulcast 1	866.16250*	866.28750*	866.41250*	866.56250*	866.71250	866.81250	866.92500	867.08750	867.11250
		867.31250	867.33750	867.57500	867.60000	867.82500	867.85000	868.10000	868.12500	868.36250
		868.42500	868.62500	868.68750	868.95000					
102	Simulcast 2	866.13750*	866.31250*	866.38750*	866.58750*	866.73750	866.83750	867.16250	867.18750	867.41250
		867.63750	867.68750	867.95000	868.05000	868.27500	868.32500	868.55000	868.57500	868.85000
103	Marble Falls IR	866.46250	866.88750	867.28750	867.80000*	868.15000	868.75000			
104	Honeycomb IR	867.26250	867.72500*	868.17500	868.77500					
105	Burleson Manor IR	867.87500	868.22500*	868.50000	868.92500					
106	USGS Shingle IR	867.66250	867.92500*	868.40000	868.80000					

Standard P25 System

- Here is a conceptual layout diagram of a basic P25 system. (Click here for a legend of the diagram.)
- For more information on P25 systems and how they work, see the Project 25 page at Radio Reference's Wiki.

- Programming a P25 System
  - Create a system
    - System properties
  - Create at least 1 site
    - Site properties
  - Create at least 1 frequency in each site
    - Frequency properties
- Programming a system for Scanning
  - Create at least 1 channel group
    - Channel group properties

- Create at least 1 channel in each group
  - Channel properties

Programming a P25 System

To program a P25 system, you'll need to program the required elements in following order:

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *P25* .
3. The scanner will prompt you for the sub-type. Select *Standard trunk* .
4. When the scanner prompts you confirm, tap **YES** .
5. The scanner creates the system with a default name. Select Edit Name if you want to change it.
6. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

All of these options can be found under your scanner's Program System menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Number tag	Edit Sys Option#Set Number Tag
Optional	
Automatic Gain Control (AGC)	BCD396XT: Edit Sys Option#Set Audio AGC BC346XT: Not available
Delay time	Edit Sys Option#Set Delay Time
ID format	Edit Sys Option# Set ID Format (DEC/HEX) or (AFS/DEC)
ID scan/search	Edit Sys Option#ID Scan/Search

Priority ID scan	Edit Sys Option#Priority ID scan
Available operations	
Copy a system	Copy System
Delete a system	Delete System
Review locked-out IDs	Edit Sys Option#Rvw ID:Srch L/O
Clear all locked-out IDs	Edit Sys Option#Clr All L/O IDs

Create at least 1 site

Each P25 system can contain up to 256 sites, and all systems must contain at least 1 site.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Site menu and select *New Site* .
3. If you need to change any of the site properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Site properties

All of these options can be found under your scanner's Edit Site menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Band plan	Edit Band Plan
Name	Edit Name
Quick key	Set Quick Key
Optional	
Attenuator	Set Attenuator

Hold time	Set Hold Time
Location information	Set LocationInfo
Lockout	Set Lockout
Startup key	Set Startup Key
Available operations	
Delete a site	Delete Site

Create at least 1 frequency in each site

Each P25 system can contain up to 20 frequencies in each site, and all sites must contain at least 1 frequency.

1. On the Edit Site menu, select the site you just created.
2. Go to the Set Frequencies sub-menu and select *New Frequency* .
3. Enter at least 1 frequency for this site.
4. If you need to change any of the frequency properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Frequency properties

All of these options can be found by selecting the frequency under the Set Frequencies sub-menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option Name
Required	
None	
Recommended	
None	
Optional	
Lockout	Set Lockout
Available Operations	

Delete a frequency	Delete Frequency

Programming a system for Scanning

Once you create the system and at least 1 site, you can Search the system with no problems. However, if you want to Scan the system, you'll need to program the required elements in following order (click here for information on using the menu):

Create at least 1 channel group

Each P25 system can contain up to 20 channel groups, and any system you want to scan must contain at least 1 channel group.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Group menu and select *New Group* .
3. If you need to change any of the channel group properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel group properties

All of these options can be found by selecting the group name under your scanner's Edit Group menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
None	
Recommended	
Name	Edit Name
Quick key	Set Quick Key
Optional	
Location information	Set LocationInfo
Lockout	Set Lockout
Available operations	

Delete a group	Delete Group

Create at least 1 channel in each group

Each trunked system can contain up to 500 channels in each group, and all groups must contain at least 1 channel.

1. On the Edit Group menu, select the channel group you just created.
2. Go to the Edit Channel menu and select *New Channel* .
3. Input the Talk Group ID (TGID) for this channel.
4. If you need to change any of the channel properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel properties

All of these options can be found by selecting the channel name your scanner's Edit Channel menu. If necessary, the sub-menu and option name on each scanner are listed beside the property.

Property	Option name
Required	
TGID	Edit Talk Group ID
Recommended	
Name	Edit Name
Number tag	Set Number Tag
Optional	
Alert	Set Alert
Lockout	Set Lockout
Priority	Set Priority
Volume Offset	Volume Offset
Available operations	
Copy a channel	Copy Channel

Delete a channel	Delete Channel

The information on this page applies to the following scanner(s): BCD996XT BCD396XT Users Guide

Single-Frequency P25 Trunked Systems

Single-frequency P25 systems are almost identical to standard P25 systems, except they only have one site per system and the system can use a P25 network address. Here is a conceptual layout diagram of a single-frequency P25 system (click here for a legend of the diagram).

- Programming a Single-Frequency P25 System
  - Create a system
    - System properties
    - Create exactly 1 site
    - Site properties
- Programming a system for Scanning
  - Create at least 1 channel group
    - Channel group properties
  - Create at least 1 channel in each group
    - Channel properties

Programming a Single-Frequency P25 System

To program a single-frequency P25 system, you'll need to program the required elements in following order (click here for information on using the menu):

Create a system

1. Go to the Program System menu and choose *New System* .
2. The scanner will prompt you for the System Type. Select *P25* .
3. When the scanner prompts you confirm, tap **YES** .
4. The scanner creates the system with a default name. Select Edit Name if you want to change it.
5. If you need to change any of the system properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

System properties

(All of these options can be found under the Program System menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

Required	None
Recommended	Name (Edit Name)
	Network address (Edit Sys Option#P25 NAC Option)
	Number tag (Edit Sys Option#Set Number Tag)
Optional	Automatic gain control (AGC) (Edit Sys Option#Set Audio AGC)
	Delay time (Edit Sys Option#Set Delay Time)
	ID format (Edit Sys Option#Set ID Format (DEC/HEX) or (AFS/DEC))
	ID scan/search (Edit Sys Option#ID Scan/Search)
Available Operations	Copy system
	Delete system
	Review Locked-Out IDs (Edit Sys Option#Rvw ID:Srch L/O)
	Clear All Locked-Out IDs (Edit Sys Option#Clr All L/O IDs)

Create exactly 1 site

Each single-frequency P25 system must contain exactly 1 site.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Site menu and select *New Site* .
3. Select the Set Frequencies menu and enter the frequencies for this site.
4. If you need to change any of the site properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default

settings.

Site properties

(All of these options can be found by selecting the site name under the Edit Site menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

Required	Frequencies (Set Frequencies)
Recommended	Name (Edit Name)
	Number tag (Set Number Tag)
	Quick key (Set Quick Key)
Optional	Attenuator (Set Attenuator)
	Hold time (Set Hold Time)
	Location information (Set LocationInfo)
	Lockout (Set Lockout)
	Startup key (Set Startup Key)
Available Operations	Delete Site

Programming a system for Scanning

Once you create the system and site, you can Search the system with no problems. However, if you want to Scan the system, you'll need to program the required elements in following order (click here for information on using the menu):

Create at least 1 channel group

Each P25 system can contain up to 20 channel groups, and any system you want to scan must contain at least 1 channel group.

1. On the Program System menu, select the system you just created.
2. Go to the Edit Group menu and select *New Group* .
3. If you need to change any of the channel group properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel group properties

(All of these options can be found by selecting the group name under the Edit Group menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

Required	None
Recommended	Name (Edit Name)
	Quick key (Set Quick Key)
Optional	Location information (Set LocationInfo)
	Lockout (Set Lockout)
Available operations	Delete Group

Create at least 1 channel in each group

Each trunked system can contain up to 500 channels in each group, and all groups must contain at least 1 channel.

1. On the Edit Group menu, select the channel group you just created.
2. Go to the Edit Channel menu and select *New Channel* .
3. Input the Talk Group ID (TGID) for this channel.
4. If you need to change any of the channel properties, you can do that now. Unless a property is *Required* , you can operate the system without changing the default settings.

Channel properties

(All of these options can be found by selecting the channel name under the Edit Channel menu. If necessary, the sub-menu and the exact option name are listed beside each property.)

Required	TGID (Edit Talk Group ID)
Recommended	Name (Edit Name)
	Number tag (Set Number Tag)
Optional	Alert (Set Alert)
	Lockout (Set Lockout)
	Volume Offset
Available operations	Copy Channel
	Delete Channel

This page applies to the following scanner(s): BCD996XT BCD396XT Users Guide

Radio Systems Overview

There are two basic types of radio systems: conventional systems and trunked systems.

- Conventional radio systems
- Trunked radio systems
  - Trunked system basics
  - How a trunked system works
  - A real life example

Conventional radio systems

In a conventional radio system, each group of users is assigned one (for simplex systems) or two frequencies (for repeater systems). For example, the police in your area might operate on 460.500 MHz, the fire department on 154.445 MHz, the highway department on 37.900 MHz, etc. All transmissions from each group always go out on the on the same frequency--the police won't randomly switch to 500.000 MHz, for instance.

Since each group always stays on the same frequency and frequencies never overlap, it's very easy to follow conversations on conventional systems: when your scanner stops on a frequency, you usually know who it is, and more importantly, you can stop on a channel and listen to an entire conversation.

Up until the late 1980s, this was the primary way that radio systems operated. Some examples of conventional radio systems are

- Aircraft
- Amateur radio
- FRS/GMRS users
- Small, private radio systems

Trunked radio systems

Several major trends have converged that have resulted in agencies moving to more efficient *trunked* radio systems:

- Higher levels of radio usage has meant that there arent enough individual frequencies available to allow every group to have their own frequency.
- Technology advances have brought down the overall cost and complexity of implementing a trunked radio system while increasing the features available to the agency and individual radio users.
- Roll-out of major statewide trunked systems makes it easier for even small agencies to piggy back onto the larger system for less cost than replacing existing systems.

Trunked system basics

There are three major elements common to most trunked systems:

System Controller

The system controller is a special computer that assigns voice channels to users as they key up their radio. The controller is the brains behind the trunking system.

Voice Frequency Pool

The voice frequency pool is a selection of radio frequencies available to the system controller for assigning voice traffic. By assigning voice frequencies to channels only as they are needed, a trunked system can support many more channels than it actually has frequencies.

Talk Group IDs

A Talk Group ID identifies which user or agency has been assigned a particular voice frequency at any particular moment. The Talk Group ID is essentially the user's "channel": since each voice frequency is used over and over by all the agencies on the system, trunked systems rely on the Talk Group ID to identify which particular user or agency is talking.

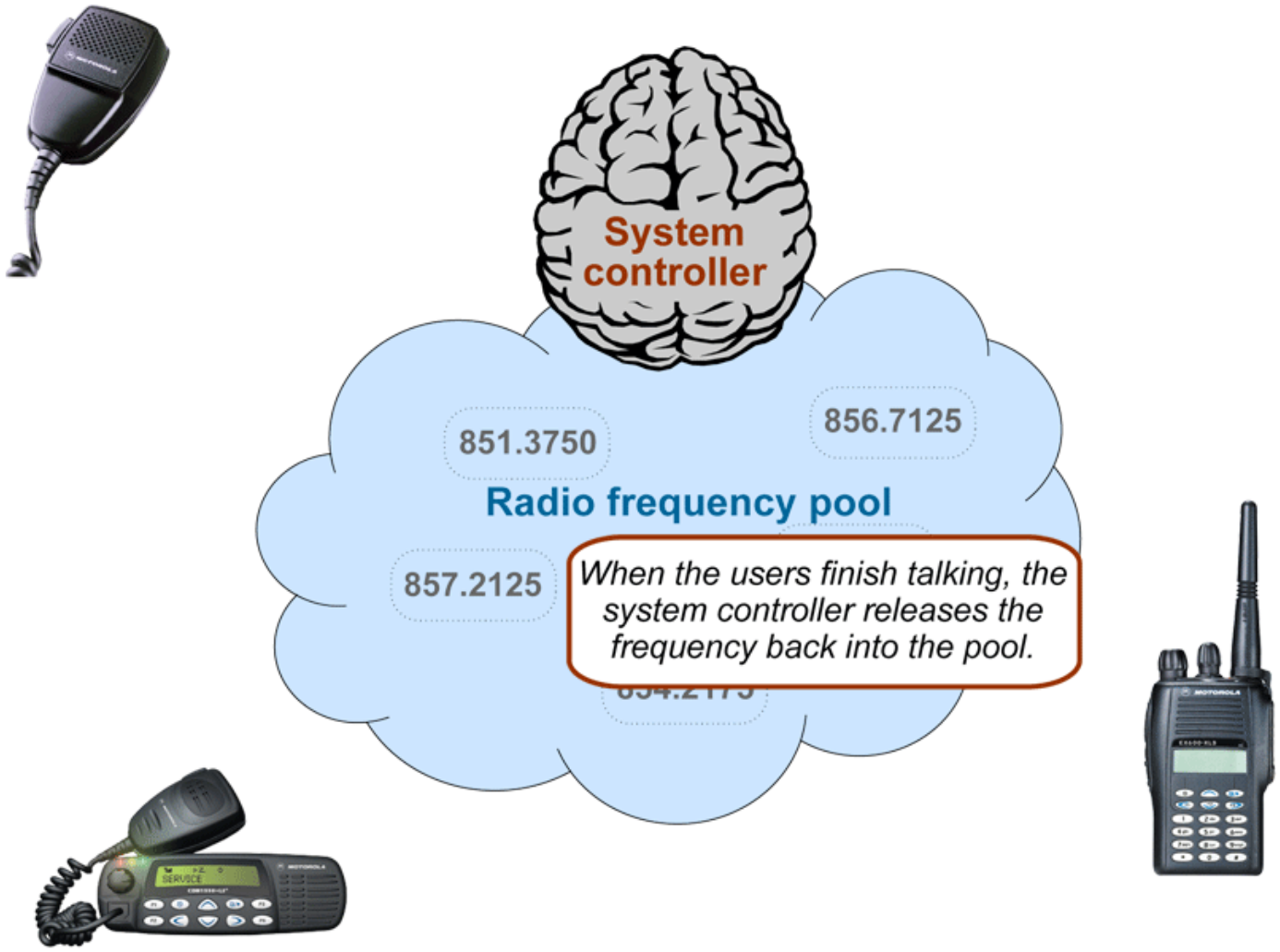
How a trunked system works

A typical communication on a trunked system goes something like this:

1. A user selects the channel they want to communicate on and presses the PTT button on the side of their radio.
2. This sends a channel request message to the controller that the user wants to start a transmission on the Talk Group ID (the channel) that they selected.
3. The controller locates an unused voice frequency and assigns it to that Talk Group ID.
4. The controller then sends out a *channel grant message* to all radios on the system so everyone knows where to find the voice channel for that Talk Group.
5. At this point, the original user's radio beeps, and the user can begin their transmission. While this sounds complicated, in real life this process takes about half a second (sometimes less).

When the user releases the PTT button, the controller releases the voice frequency from its Talk Group ID assignment, leaving the frequency free for the next user that becomes active.

A real life example



A typical 20-frequency trunked system can support hundreds of channels. For example, the Fort Worth system includes over 400 channels providing communication support for Fort Worth agencies (Police, Fire and Ambulance) and agencies in the surrounding cities of Kennedale, North Richland Hills, Forest Hill, Haltom City and Richland Hills. In addition, the same system also supports the Tarrant County Sheriff and Texas Christian University. (You can see its setup in the RadioReference database.)

Before moving to the trunked system, the Police had only 6 channels (North, South, East, West, Information, and Tactical). Since moving to the trunked system, they are now able to provide 11 channels for North Side PD alone: a main dispatch channel, three talkaround channels, a supervisor channel, a bike patrol channel, and several community patrol channels. Other police districts have similar channel requirements, and now special

operations teams such as SWAT, Narcotics, and Traffic each have one or more dedicated channels for their use as well.

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Deciphering Trunked Systems

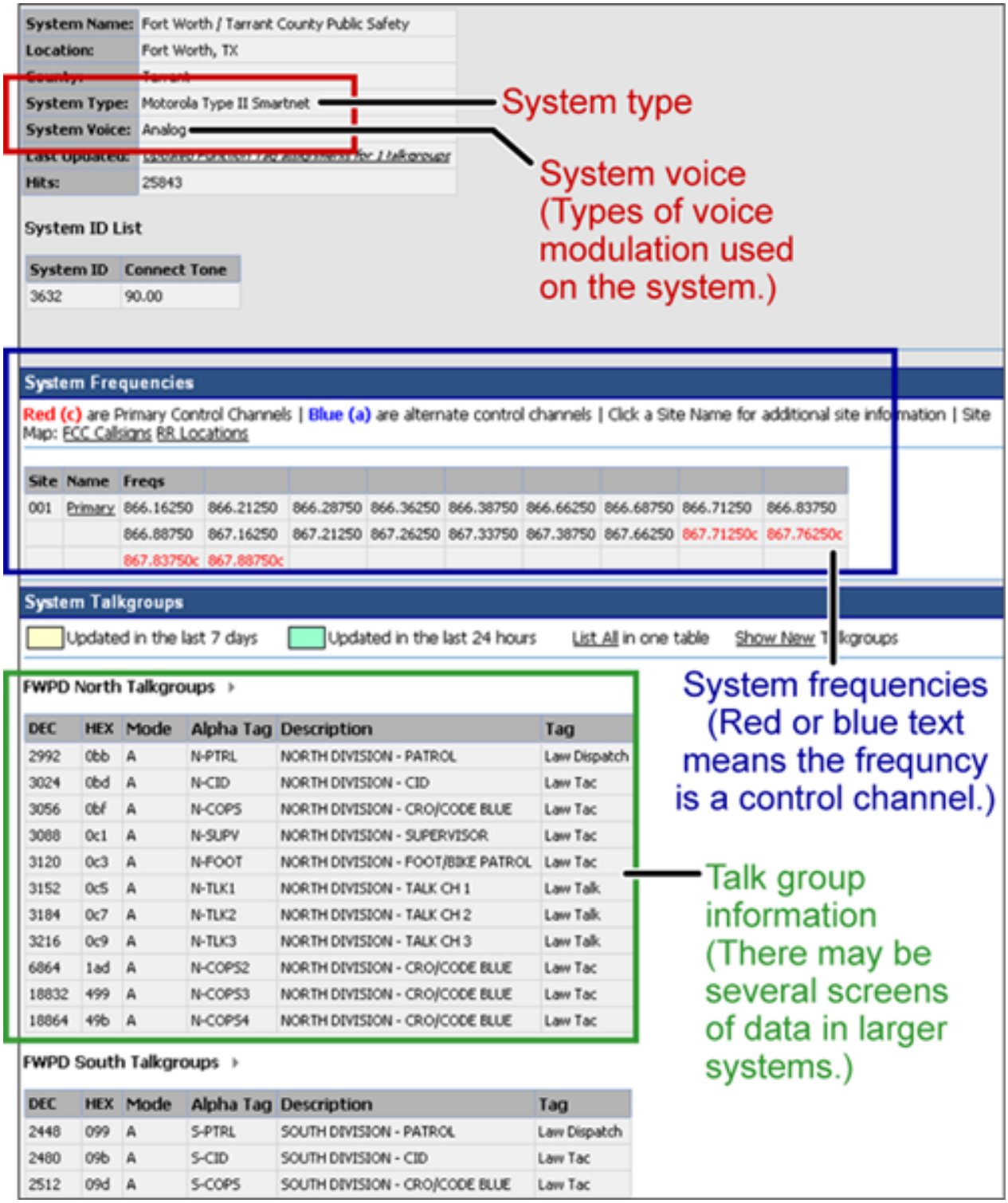
- Before you program a trunked system
  - System Type
    - P25 Systems
    - LTR Systems
    - Motorola Systems
    - EDACS Systems
    - Conventional Systems
    - Non-scannable Systems
  - System Voice
  - System Frequencies
  - Talk Group IDs (Channels)

Before you program a trunked system

To the average radio user, the complexity of a trunked system is invisible. Their radio is programmed up at the radio shop. They can still easily select who they need to communicate with by selecting a channel on their two-way. They can even directly call other radio users without tying up a dispatch channelsomething they could never do before. As a scanner user, on the other hand, you need to know the different types of trunking systems in use, what options are available on each system, and three key pieces of information about any trunking system before you start any actual programming:

- System Type
- System Frequencies
- IDs of the Talk Groups you want to hear

All of this information is usually available from the online database at RadioReference. The picture to the right shows a screenshot of a system from the database, with the pertinent information highlighted.



System Type

There are five major types of scannable systems; some of these also have subtypes. In the RadioReference database, you can generally determine the radio system type by looking at the line labeled *System Type* at the top of the screen (inside the red square in the screenshot).

P25 Systems

These are identified in the RadioReference database as *Project 25 Standard* . If the System Type line says anything else, then it is not a P25 system (even though it might have some P25 channels).

LTR Systems

These systems are identified as *LTR Standard* in the system type.

Motorola Systems

There are several subcategories of Motorola systems, but they will all have some form of *Motorola* in the system type: *Motorola Fleetnet* , *Motorola Smartnet* , *Motorola Smartzone* , etc. Once you have identified that it is a Motorola system, you can check the system frequencies to confirm its subtype:

- Motorola 800: all of the frequencies are in the 800 MHz range
- Motorola 900: all of the frequencies are in the 900 MHz range
- Motorola UHF: all of the frequencies are between 400 and 512 MHz
- Motorola VHF: all of the frequencies are between 100 and 200 MHz.

EDACS Systems

There are three subtypes of EDACS systems:

- EDACS Wide: identified as *EDACS Standard* in the system type.
- EDACS Narrow: identified as *EDACS Narrowband* in the system type.
- EDACS SCAT: identified as *EDACS Scat* in the system type (these systems operate on a single frequency).

Conventional Systems

This fifth type of scannable system is a general catchall for all non-trunked systems. See Conventional Systems for more information.

Non-scannable Systems

There are several system types that cannot be monitored with a scanner, either because the systems use proprietary digital formats that are not licensable by scanner manufacturers, or because the systems are not in wide enough use to make it cost-effective for manufacturers to

develop a scanner that can monitor them.

These non-scannable systems are identified in the system type as:

- EDACS w/ESK
- LTR Passport
- OpenSky Standard
- MPT1327
- Tetra

System Voice

The other line inside the red square in the screenshot is *System Voice* , which summarizes the kinds of voice modulation used on the system. Youll find the following voice types:

- Analog (can be heard with any trunking scanner)
- APCO-25 (can be heard with a digital scanner)
- ProVoice (cannot be heard by any scanner)
- VSELP (cannot be heard by any scanner)

System Name:	Mansfield Public Safety
Location:	Mansfield, TX
County:	Tarrant
System Type:	Motorola Type II SmartZone
System Voice:	Analog and APCO-25 Common Air Interface
Uniden DSP:	983 1985 2892
Last Updated:	*Tagged 21 Talkgroups with (Law Dispatch)*
Hits:	5225

The system voice also tells us when digital channels are mixed in with analog channels on the same system. Unfortunately, this means the system voice line can cause a lot of confusion. Just remember: system *voice* does not define the system *type* .

For example, in the system information shown to the left, we see that *APCO-25* can be used as a voice type on a Motorola system that is not actually a *P25 system* . When we're trying to determine whether a system is a P25 system, we need to ignore the System Voice line and focus on the *System Type* line. If there is P25 Voice on a non-P25 system, the scanner can sort this out while scanning.

System Frequencies

The *system frequencies* section in the database lists all the frequencies used by the system (see the blue square in the screenshot above on the right). For Motorola and P25 systems, you will

need to program only the system control channel frequencies: those are the frequencies shown in red (for primary control channels) and blue (for alternate control channels) in the database.

For EDACS and LTR systems, you will need to program all the listed frequencies and their associated LCN (that is a small number right next to the frequency). Some systems have multiple sets of frequencies. These are called *multi-site* systems: each set of frequencies corresponds to a different physical antenna site.

Talk Group IDs (Channels)

The Talk Group information section (inside the green rectangle) shows the different channels on the system and which agency uses them. You'll need to go through the list and make a note of the channels you want to hear. Then you can start thinking about how you want to organize those channels.

(Keep in mind that this screenshot shows just a few of the channels on a single system. One of the great features available to subscribers on RadioReference is the ability to tag channels directly on the site and print out a nicely-formatted hardcopy of each system. It makes this task much, much easier.)

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Location-based Scanning

Location-based scanning allows you to control which systems/sites and channel groups are scanned based on your exact location. This frees you from having to manually enable and disable systems or channel groups as you change location.

To use Location-Based scanning, you need to have the following:

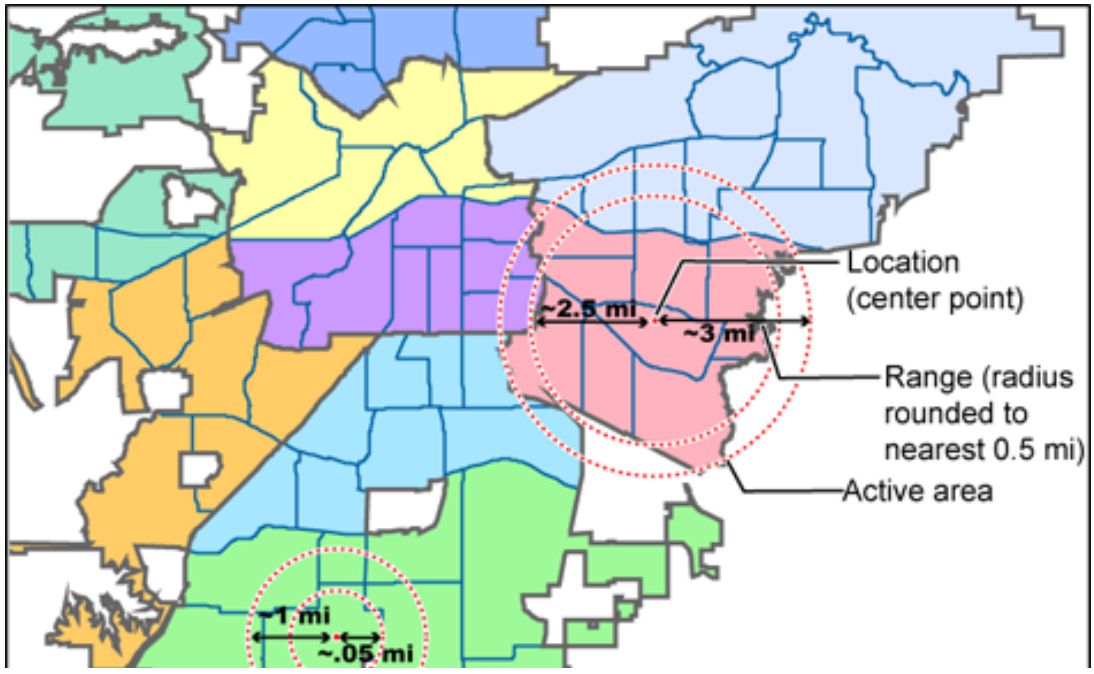
- the location for the center point for each system/site or channel group you want to control
- the radius or distance from the center point you want to set as the range for each system/site or channel group
- if you are scanning while traveling, you may want to include the heading (direction) of travel
- some type of mapping method. If you don't want to use paper maps, you might try a mapping software (such as Microsoft® Streets and Trips or Delorme® Street Atlas) that allows you to draw markings and overlays on maps.
- a GPS receiver with a serial data output (NMEA)

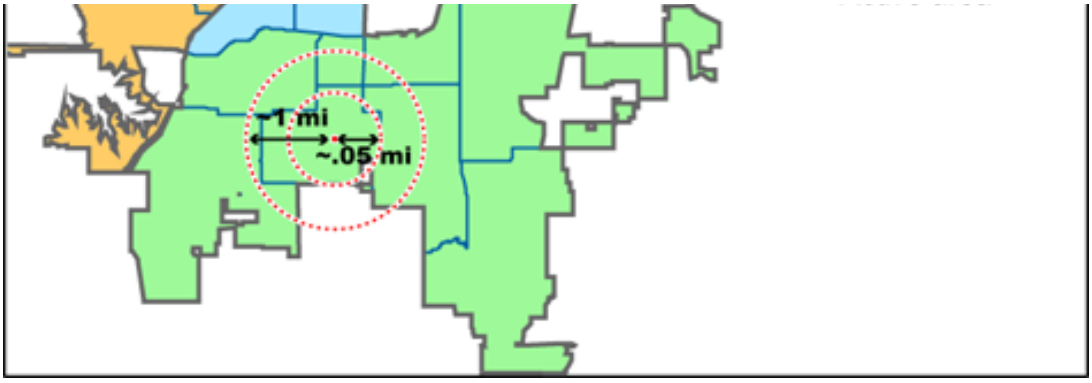
There are many different approaches you can use to determine where to place a center point for a system/ site or channel group. The two most common are the geopolitical approach and the antenna-centric approach. For large trunked systems, you may find that a combination of these two approaches works best.

- The Geopolitical Approach
- The Antenna-Centric Approach
  - Finding an antenna location
- Combining for Efficiency
- See Also

The Geopolitical Approach

With the geopolitical approach, you want the scanner to turn on the system/ site or channel group at the limit of relevance rather than reception. This approach is useful for scanning





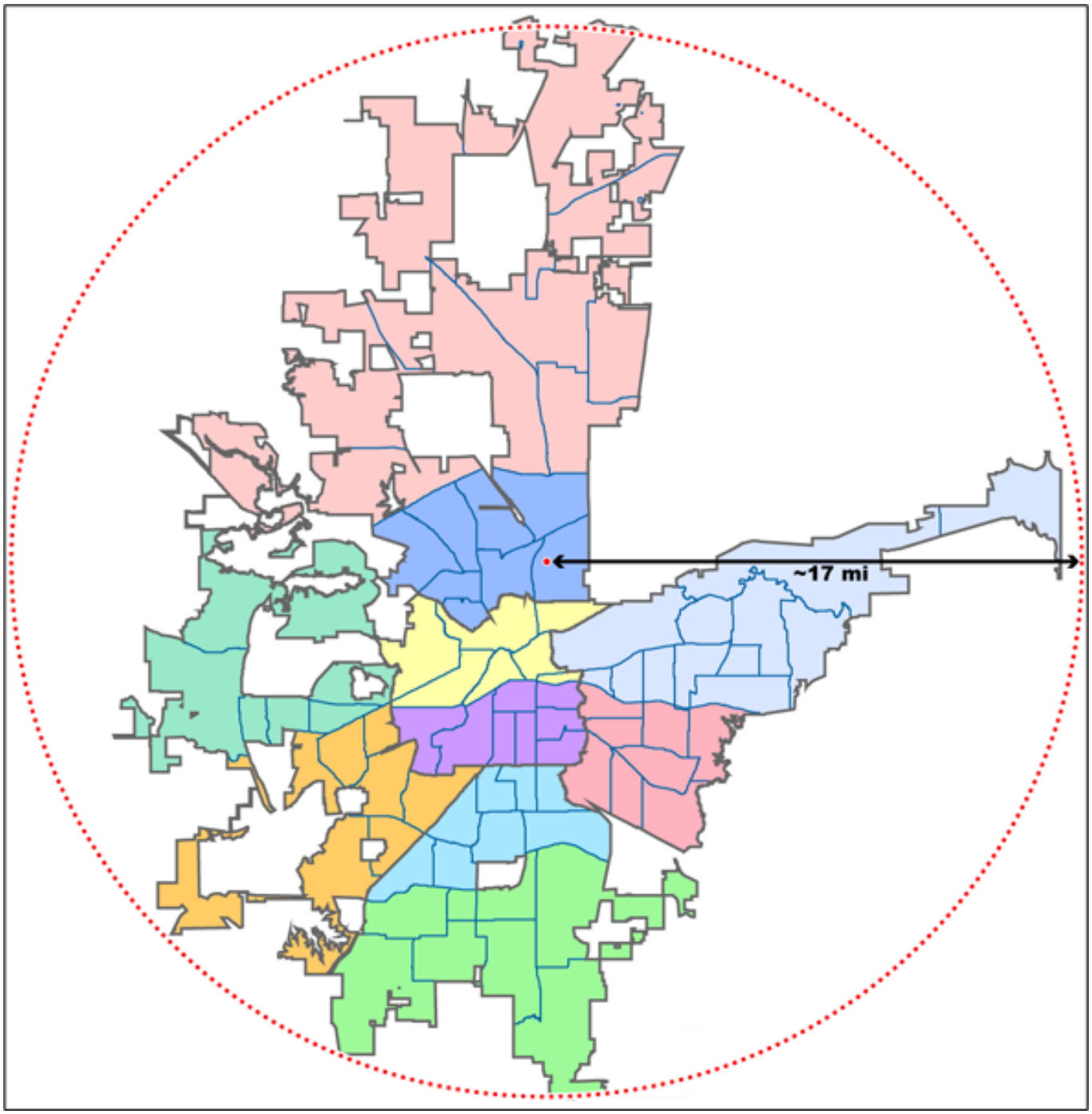
targets that have a well-defined jurisdiction and their transmission are only relevant when you are within that jurisdiction.

To use the geopolitical approach, find the geographical center of the scanning target's territory (whether city, county, district, precinct, or other agency jurisdiction), and set these coordinates as your center point location. Then, adjust the range or radius to cover the boundaries of that target.

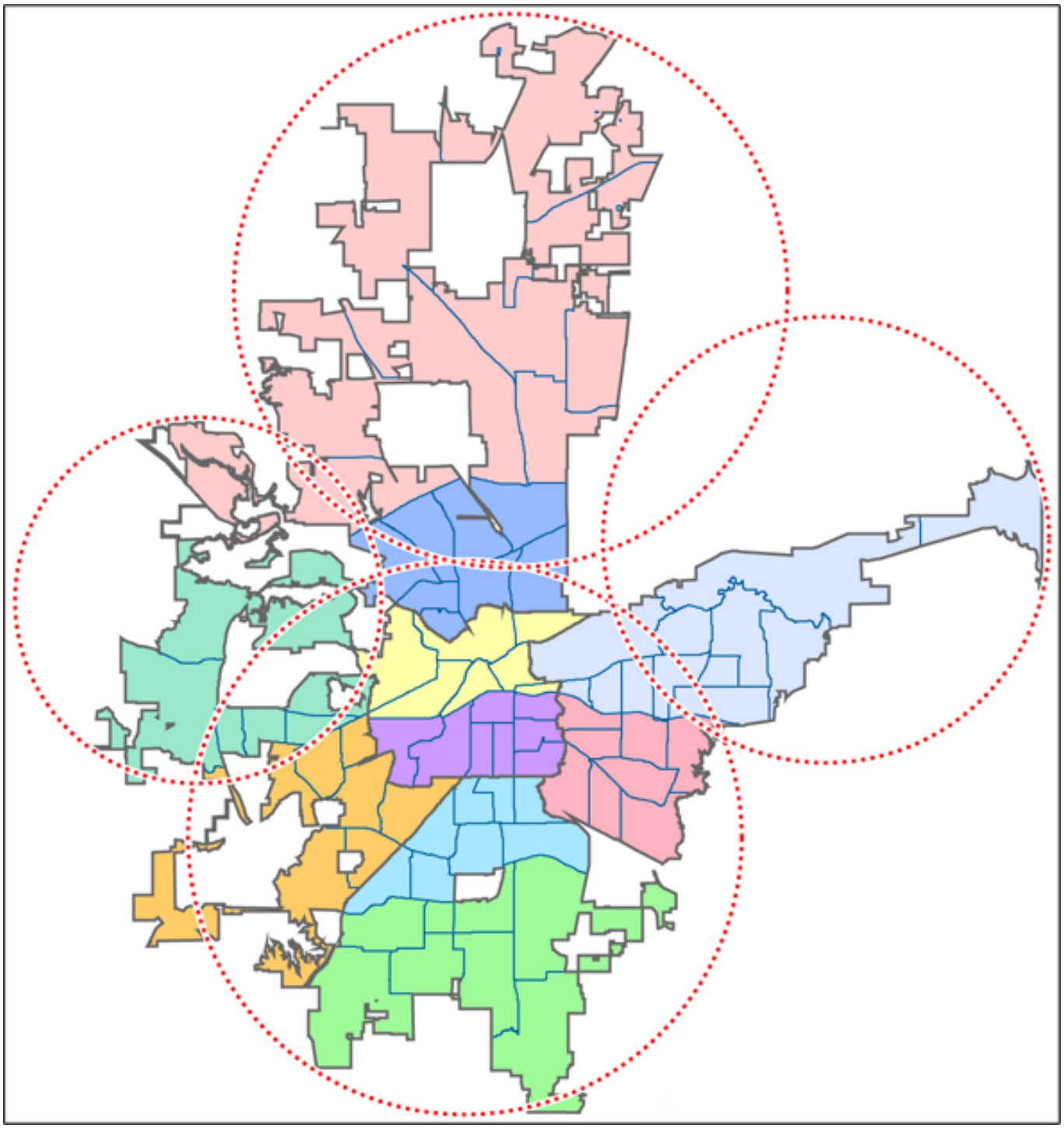
To use this method, use your chosen mapping application to zoom out so that the entire target is visible, then, draw a circle that just covers the targets boundaries. Adjust the size of the circle to the nearest 1/2 mile increment.

Depending on the shape of the territory, you may have to choose between a lot of overlap or not covering the entire area: jurisdiction, you might end up with a large amount of overlap. You'll have to decide which radius that best suits your application.

For example, if your territory is a city, you'll have a lot of "extra" area if you use one single location:

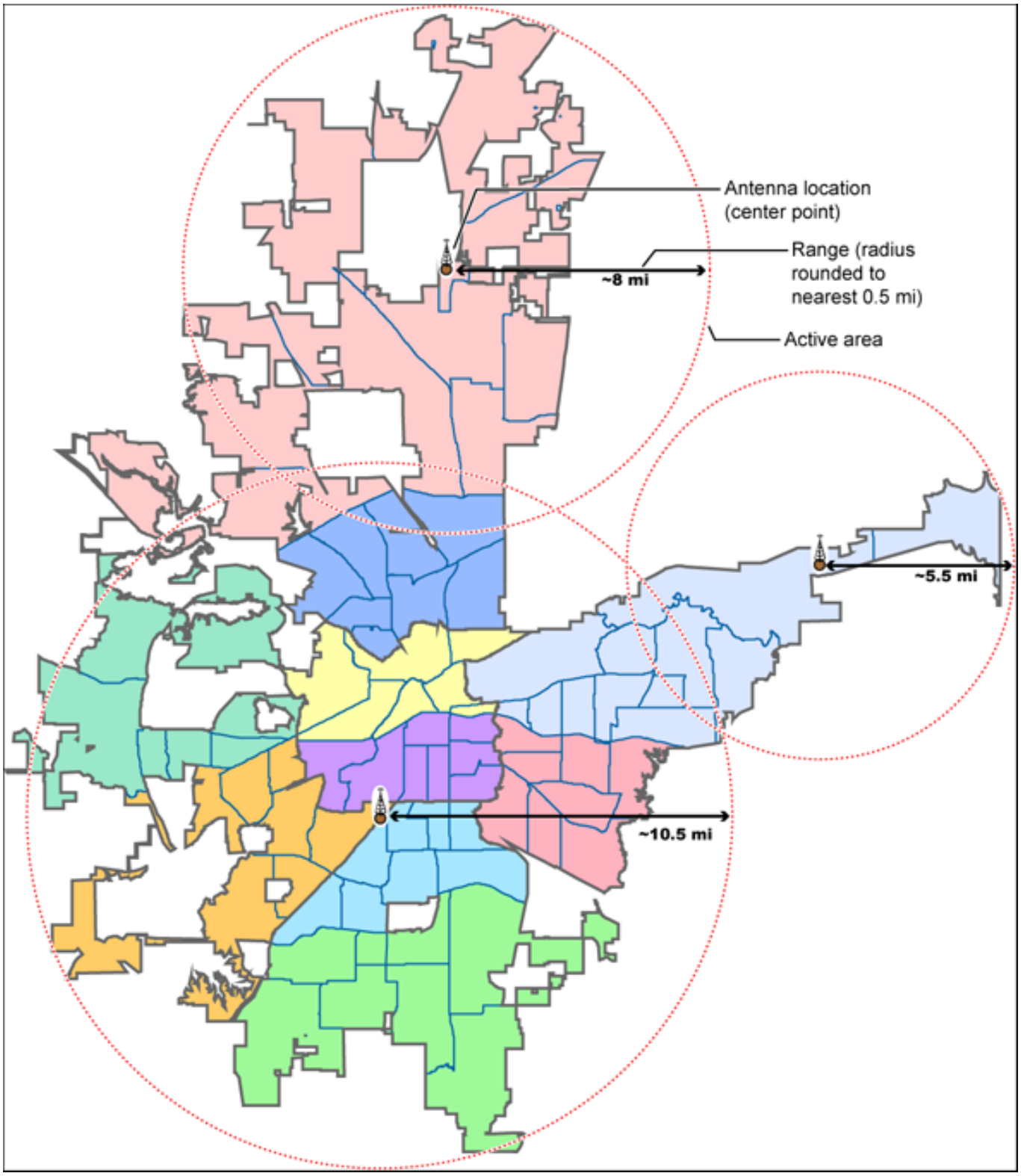


On the other hand, if you sub-divide the area, you may end up with areas that are not covered:



The Antenna-Centric Approach

Using an antenna-centric approach, you set the physical antenna location as the system/sites center point and the antenna's actual reach as the range.

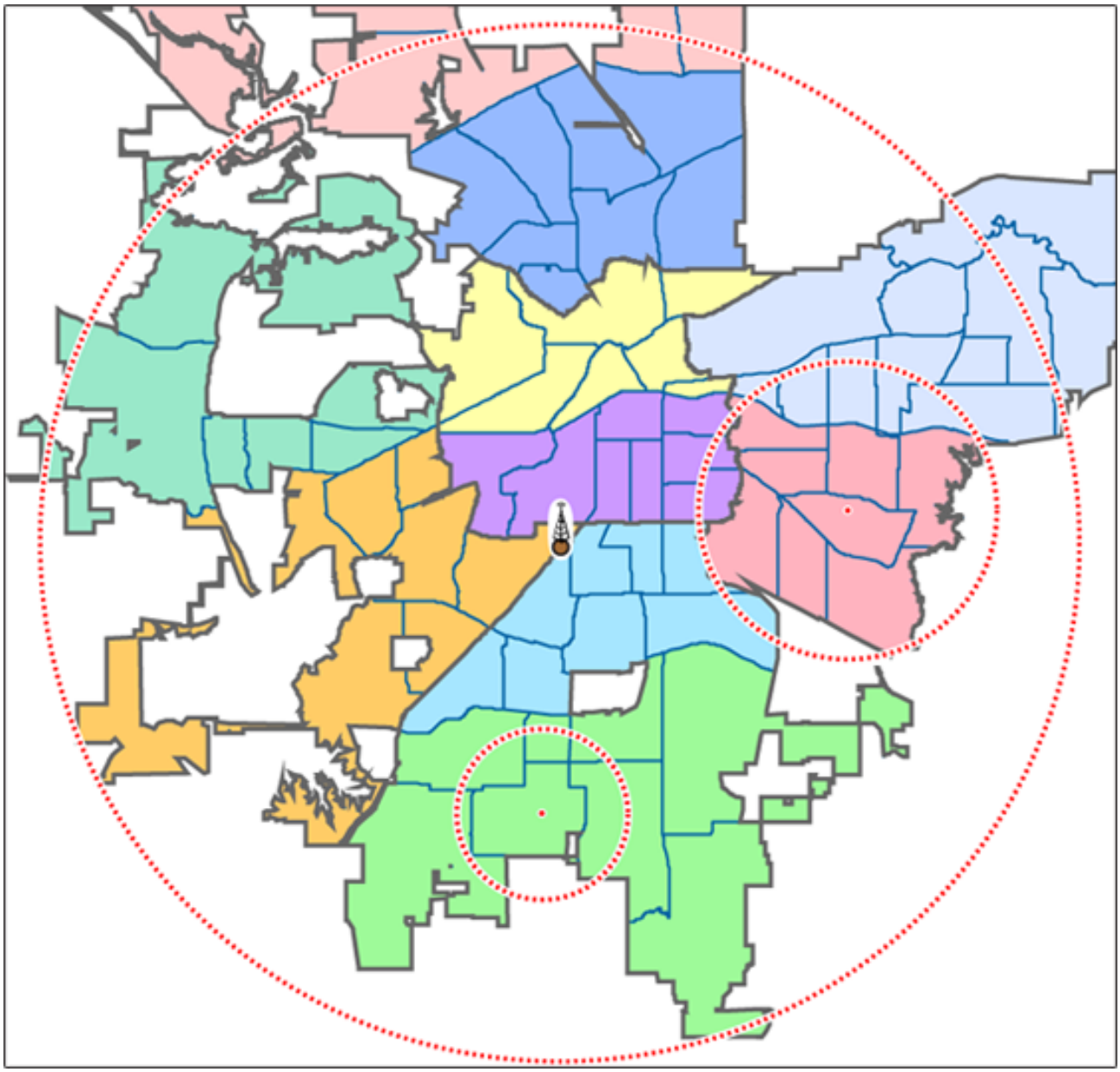


Finding an antenna location

You can find the physical location of antennas using the databases available at Radio Referenceor the FCC's Antenna Structure Registration site. Both sites list the latitude, longitude, and height of the antenna, and both sites can map the exact location for you. (Radio Reference is more user-friendly, so it's easier to

find what you're looking for.)

Combining for Efficiency



Because many trunked systems have both multiple antenna sites and multiple agencies with differing geographic boundaries, you may want to combine the approaches:

1. Use the antenna centric approach at the site level: set the geographic coordinates of the antenna as the central location for each site.
2. Use the geopolitical approach at the channel group level. Within the same system, set up a channel group for each agency, and set the central point of the agency territory as the group location.

With both approaches combined into a single system, the scanner will now seamlessly switch between

antenna sites as needed to keep the scanner tuning only to those sites you can receive well, and will also turn channel groups on and off as you relocate to different jurisdictions.

See Also

Connecting a GPS receiver
Programming locations

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Scanning Legally

Your scanner covers frequencies used by many different groups, including police and fire departments, ambulance services, government agencies, private companies, amateur radio services, military operations, pager services, and wireline (telephone and telegraph) service providers.

It is legal to listen to almost every transmission your scanner can receive. However, there are some transmissions that you should never intentionally listen to. These include:

- Telephone conversations (cellular, cordless, or other private means of telephone signal transmission)
- Pager transmissions
- Any scrambled or encrypted transmissions

According to the Electronic Communications Privacy Act (ECPA), you are subject to fines and possible imprisonment for intentionally listening to, using, or divulging the contents of such a conversation unless you have the consent of a party to the conversation (unless such activity is otherwise illegal).

This scanner has been designed to prevent the reception of cellular telephone transmissions and the decoding of scrambled transmissions. This is done to comply with the legal requirement that scanners be manufactured so they are not easy to modify to pick up these transmissions. Do not open your scanners case to make any modifications that could allow it to pick up transmissions that are illegal to monitor. Modifying or tampering with your scanners internal components or using it in a way other than as described in the manual could invalidate your warranty and void your FCC authorization to operate it.

In some areas, mobile and/or portable use of this scanner is unlawful or requires a permit. Check the laws in your area. It is also illegal in many areas (and a bad idea everywhere) to interfere with the duties of public safety officials by traveling to the scene of an incident without authorization.

Digital Scanners Only: A license is required to use this product in Canada!

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

General Precautions

Before you use this scanner, please read and observe the following:

Earphone Warning

You can use an optional 32Ω stereo headset or earphone with your scanner. Use of an incorrect earphone or headset might be potentially hazardous to your hearing. The output of the phone jack is monaural, but you will hear it in both headphones of a stereo headset.

Set the volume to a comfortable audio level coming from the speaker before plugging in the earphone or headset. Otherwise, you might experience some discomfort or possible hearing damage if the volume suddenly becomes too loud because of the volume control or squelch control setting. This might be particularly true of the type of earphone that is placed in the ear canal.

Liquid Exposure Warning

Uniden does not represent this unit to be waterproof. To reduce the risk of fire or electrical shock, do not expose this unit to rain or moisture!

Power Disconnection Caution

Important: Always turn the scanner off before disconnecting external power. Some settings are saved only as the scanner is powering down.

This topic applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

FCC Information

The FCC Wants You to Know

IMPORTANT! This scanning radio has been manufactured so that it will not tune to the radio frequencies assigned by the FCC for cellular telephone usage. The Electronic Communications Privacy Act of 1986, as amended, makes it a federal crime to intentionally intercept cellular or cordless telephone transmissions or to market this radio when altered to receive them. The installation, possession, or use of this scanning radio in a motor vehicle may be prohibited, regulated, or require a permit in certain states, cities, and/or local jurisdictions. Your local law enforcement officials should be able to provide you with information regarding the laws in your community.

For more details, see Scanning Legally.

Modification Notice

Changes or modifications to this product not expressly approved by Uniden, or operation of this product in any way other than as detailed by this User's Guide, could void your authority to operate this product.

Part 15 Information

This scanner has been tested and found to comply with the limits for a scanning receiver, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This scanner generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

There is no guarantee that interference will not occur in a particular installation. If this scanner does cause harmful interference to radio or television reception, which can be determined by turning the scanner on and off, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the scanner and the receiver

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Warranty and Support Information

Support Information

Information online	www.uniden.com
Email support	http://mycusthelp.com/uniden
Phone support	(800) 297-1023 (during regular business hours, Central time)

One-Year Limited Warranty

This warranty text applies to the following scanners:

- BCD396XT
- BC346XT
- BCD996XT
- BCT15X

If your scanner is not listed, the warranty information below may not apply.
Important: Evidence of original purchase is required for warranty service!

WARRANTOR: UNIDEN AMERICA CORPORATION (Uniden)

ELEMENTS OF WARRANTY: Uniden warrants, for one year, to the original retail owner, this Uniden Product to be free from defects in materials and craftsmanship with only the limitations or exclusions set out below.

WARRANTY DURATION: This warranty to the original user shall terminate and be of no further effect 12 months after the date of original retail sale. The warranty is invalid if

the Product is

(A) damaged or not maintained as reasonable or necessary,
(B) modified, altered, or used as part of any conversion kits, subassemblies, or any configurations not sold by Uniden,
(C) improperly installed,
(D) serviced or repaired by someone other than an authorized Uniden service center for a defect or malfunction covered by this warranty,
(E) used in any conjunction with equipment or parts or as part of any system not manufactured by Uniden, or
(F) installed or programmed by anyone other than as detailed by the Operating Guide for this product.

STATEMENT OF REMEDY: In the event that the product does not conform to this warranty at any time while this warranty is in effect, warrantor will repair the defect and return it to you without charge for parts, service, or any other cost (except shipping and handling) incurred by warrantor or its representatives in connection with the performance of this warranty. THE LIMITED WARRANTY SET FORTH ABOVE IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO THE PRODUCT AND IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES OF ANY NATURE WHATSOEVER, WHETHER EXPRESS, IMPLIED OR ARISING BY OPERATION OF LAW, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY DOES NOT COVER OR PROVIDE FOR THE REIMBURSEMENT OR PAYMENT OF INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states do not allow this exclusion or limitation of incidental or consequential damages so the above limitation or exclusion might not apply to you.

LEGAL REMEDIES: This warranty gives you specific legal rights, and you might also have other rights which vary from state to state. This warranty is void outside the United States of America.

PROCEDURE FOR OBTAINING PERFORMANCE OF WARRANTY: If, after following the instructions in this Operating Guide you are certain that the Product is defective, pack the Product carefully (preferably in its original packaging). Include evidence of original purchase and a note describing the defect that has caused you to return it. The Product should be shipped freight prepaid, by traceable means, or delivered, to warrantor at:

Uniden America Corporation Parts and Service Division 4700 Amon

Carter Boulevard Fort Worth, TX 76155

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BCD346XT Users Guide

User Guide Information

Illustrations in this guide are used for explanation purposes only. Your scanner may not match the illustrations exactly.

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EDACS® is a registered trademark of M/A-COM Private Radio Systems Inc.

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Users Guide

BCD996XT Specs

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

- Certified in accordance with FCC Rules and Regulations Part 15 Subpart C as of date of manufacture. (See FCC Information for more details.)
- FCC ID: AMWUB360

- BCD996XT Specs
  - General
  - Frequency Range
  - Special Functions
    - Band Scope Function
    - Two-Tone-Sequential
    - WX Alert
  - Supported trunking systems
  - Dynamic memory allocation capacity
  - Heterodyne System
  - CTCSS and DCS Tones

General

Attenuation	20dB nominal
Audio Output Power	3W nominal into 8Ω speaker
	30mW nominal into 32Ω stereo headphone
Scan Rate	100 channels per second max (Conventional mode)
Search Rate	300 steps per second max (5kHz steps only)
External Jacks	Antenna Jack: BNC Type

	Phone Jack: 3.5mm (1/8 in.) Stereo Type
	Ext.SP Jack: 3.5mm (1/8 in.) Monaural Type
	REC.Out Jack: 3.5mm (1/8 in.) Stereo Type
	Ext. DC Power and Orange Wire Jack 3 pin (Center Orange Wire)
	DC Power Jack: 5.5mm (1/5 in.) (Center Positive)
	GPS/Remote Interface Jack: D Sub 9pin Male Type
	Remote Interfase Jack (front panel): 4-pin Mini Custom Type
Internal Speaker	8.0Ω 5.0W Max. 77mm (3.0 in.)
Power Requirements	DC:11V to 16.6V(Ext.DC Power Jack or DC Power Jack)
	AC Adapter (13.8V DC 750mA Regulated) (AD-1009)
Operating Temperature	Nominal: -20°C to +60° -4°F to +140°F
	Close Call: -10°C to +60°C +14°F to +140°F
Size	7.2 in.(W) x 5.9 in.(D) x 2.2 in.(H)
Weight	3.44 lbs
Remote Functions	Direct PC control
	Database management
	Wired cloning
Display	64 x 128 Full Dot Matrix LCD with multi-color back light

Sensitivity (nominal) 12dB SINAD		
0.3•V	25-27.995 MHz	AM
0.3•V	28-53.98 MHz	NFM
0.5•V	54-71.95 MHz	WFM
0.2•V	72-75.995 MHz	FM
0.5•V	76-107.9 MHz	FMB
0.3•V	108-136.9916 MHz	AM
0.2•V	137-173.9875 MHz	NFM
0.5•V	174-215.95 MHz	WFM
0.3•V	216-224.98 MHz	NFM
0.3•V	225-379.975 MHz	AM
0.3•V	380-512 MHz	NFM
0.3•V	758-960 MHz	NFM
0.4•V	1240-1300 MHz	NFM

Signal Noise Ratio (nominal)		
49dB	25-27.995 MHz	AM
41dB	28-53.98 MHz	NFM

54dB	54-71.95 MHz	WFM
48dB	72-75.995 MHz	FM
60dB	76-107.9 MHz	FMB
50dB	108-136.9916 MHz	AM
41dB	137-173.9875 MHz	NFM
54dB	174-215.95 MHz	WFM
41dB	216-224.98 MHz	NFM
50dB	225-379.975 MHz	AM
40dB	380-512 MHz	NFM
41dB	758-960 MHz	NFM
37dB	1240-1300 MHz	NFM

Close Call Sensitivity (nominal)	
140•V	VHF Low1 Band
100•V	VHF Low2 Band
80•V	Air Band
80•V	VHF High1 Band
90•V	VHF High2 Band

110•V	UHF Band
180•V	800MHz+ Band

Frequency Range

Frequency Range (MHz)	Modulation	Step (kHz)	Name
25.0000-26.9600	AM	5	Petroleum Products & Broadcast Pickup
26.9650-27.4050	AM	5	CB Class D Channel
27.4100-27.9950	AM	5	Business & Forest Products
28.0000-29.6800	NFM	20	10 Meter Amateur Band
29.7000-49.9900	NFM	10	VHF Low Band
50.0000-53.9800	NFM	20	6 Meter Amateur Band
54.0000-71.9500	WFM	50	VHF TV
72.0000-75.9950	FM	5	Intersystem & Astronomy
76.0000-87.9500	WFM	50	VHF TV
88.0000-107.9000	FMB	100	FM Broadcast
108.0000-136.9916	AM	8.33	Aircraft Band
137.0000-143.9875	NFM	12.5	Military Land Mobile
144.0000-147.9950	NFM	5	2 Meter Amateur Band

148.0000-150.7875	NFM	12.5	Military Land Mobile
150.8000-161.9950	NFM	5	VHF High Band
162.0000-173.9875	NFM	12.5	Federal Government
174.0000-215.9500	WFM	50	VHF TV
216.0000-224.9800	NFM	20	1.25 Meter Amateur Band
225.0000-379.9750	AM	25	Military Aircraft Band
380.0000-399.9875	NFM	12.5	Military Land Mobile
400.0000-405.9875	NFM	12.5	Miscellaneous
406.0000-419.9875	NFM	12.5	Federal Government Land Mobile
420.0000-449.9875	NFM	12.5	70 cm Amateur Band
450.0000-469.9875	NFM	12.5	UHF Standard Band
470.0000-512.0000	NFM	12.5	UHF TV
758.0000-775.99375	NFM	6.25	Public Service Band
788.0000-805.99375	NFM	6.25	Public Service Band
806.0000-823.9875	NFM	12.5	Public Service Band
849.0125-868.9875	NFM	12.5	Public Service Band
894.0125-960.0000	NFM	12.5	Public Service Band
1240.0000-1300.0000	NFM	25	25 cm Amateur Band

Special Functions

Band Scope Function

- Frequency Span 0.2 MHz To 500 MHz
- Frequency Step 5 kHz To 100 kHz

Two-Tone-Sequential

- 250.0-3500.0Hz , 0.1Hz Step Programmable

WX Alert

- 1050 Hz Tone System
- NWR-SAME System (Warning / Watch / Statement)

Supported trunking systems

- Motorola Systems: Type I, II, II/I (hybrid)
- EDACS Systems: FM, NFM, and SCAT
- LTR Systems
- APCO Systems: Astro Imbe, Astro 25

Dynamic memory allocation capacity

- Systems: 500 max
- Groups: 20 per system
- Site: 1000 max (All) 256 per system
- Channels: 25000 max (40128 memory blocks)
- Channels per Trunked System: 500 max

Heterodyne System

- 1st IF: 380.7 to 380.8 MHz / 265.5 to 265.6 MHz
- 2nd IF: 10.8 MHz
- 3rd IF: 450 kHz

CTCSS and DCS Tones

CTCSS Tone Frequencies - 50 frequencies total (Hz)									
67.0	69.3	71.9	74.4	77.0	79.7	82.5	85.4	88.5	91.5
94.8	97.4	100.0	103.5	107.2	110.9	114.8	118.8	123.0	127.3
131.8	136.5	141.3	146.2	151.4	156.7	159.8	162.2	165.5	167.9
171.3	173.8	177.3	179.9	183.5	186.2	189.9	192.8	196.6	199.5
203.5	206.5	210.7	218.1	225.7	229.1	233.6	241.8	250.3	254.1

DCS Tone Codes - 104 codes total							
023	025	026	031	032	036	043	047
051	053	054	065	071	072	073	074
114	115	116	122	125	131	132	134
143	145	152	155	156	162	165	172
174	205	212	223	225	226	243	244
245	246	251	252	255	261	263	265
266	271	274	306	311	315	325	331
332	343	346	351	356	364	365	371
411	412	413	423	431	432	445	446
452	454	455	462	464	465	466	503
506	516	523	526	532	546	565	606

612	624	627	631	632	654	662	664
703	712	723	731	732	734	743	754

This page applies to the following scanners: BCD996XT Users Guide

Available Operation Modes

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

The scanner has several different operation modes; in each mode, the scanner's operation, display, and key functions can be completely different:

- Scan mode
- Search mode
- Hold mode
- Close Call Priority mode
- Close Call Only mode
- Close Call Do Not Disturb mode
- Priority Scan mode
- Priority Plus Scan mode
- GPS mode
- Weather mode
- Weather Priority Mode
- Weather Alert mode
- Tone Out mode
- Band Scope mode

Scan mode

The scanner checks each frequency in the user-programmed list of frequencies. For trunked systems, it checks each Talk Group ID in the user-programmed list. When it detects a signal, the scanner stays on the channel and opens squelch. For trunked systems, if the Talk Group ID becomes active, the scanner switches to the audio channel and opens squelch. When the signal stops, the scanner continues the scan.

For information about key operation and other specifics about Scan Mode:

- BCD396XT and BC346XT: Hand Held Scanner Scan Mode
- BCD996XT: BCD996XT Scan Mode

- BCT15X: BCT15X Scan Mode

  To enter Scan mode, tap **SCAN**. (This is the default mode when the scanner powers on.)

Search mode

The scanner checks each frequency that falls within a user-programmed range. For trunked systems, it checks each control channel in the user-programmed list. When it detects a signal, the scanner stays on the channel and opens squelch. For trunked systems, when it detects an active Talk Group ID, the scanner switches to the audio channel and opens squelch. When the signal stops, the scanner continues the search.

For information about key operation and other specifics about Scan Mode:

- BCD396XT and BC346XT: Hand Held Scanner Search Mode
- BCD996XT: BCD996XT Search Mode
- BCT15X: BCT15X Search Mode

  To enter Search mode, **FUNCTION+** tap **SCAN** . The scanner asks if you want to perform the Quick Search: tap **YES** if this is the search you want. To start a different search, tap **NO**: the scanner takes you to the Search for... menu, and you can select your search.

Hold mode

The scanner stays on the current channel and enables save and edit options (options vary depending on the type of system).

For more information about key operation and other specifics about hold mode:

- BCD396XT: BCD396XT Hold Mode
- BCD996XT: BCD996XT Hold Mode
- BC346XT: BC346XT Hold Mode
- BCT15X: BCT15X Hold Mode.

  To enter Hold mode, tap **HOLD**.

Close Call Priority mode

In Close Call Priority, the scanner interrupts its current operation every 2 seconds, searches for signals that are stronger than other signals on the selected band, then returns to the previous operation. When it detects a close call hit, the scanner can switch to the channel and open squelch (depending on the setting). In Close Call DND (do-not-disturb) mode, the scanner only interrupts if it is not already receiving audio.

For more information about key operation and other specifics about Close Call mode:

- BCD396XT or BC346XT: Handheld Scanner Close Call Mode
- BCD996XT: BCD996XT Close Call Mode
- BCT15X: BCT15X Close Call Mode

To enter Close Call mode on the BCD396XT or BC346XT, **FUNCTION** + repeatedly tap **HOLD** until Close Call Pri appears.

To enter Close Call mode on the BCD996XT, repeatedly tap the **SQ** knob until Close Call Pri appears.

To enter Close Call mode on the BCT15X, **Function** + repeatedly tap the **SQ** knob until Close Call Pri appears.

The Close Call icon appears for Close Call Priority mode and is in reverse colors for Close Call DND mode.

Close Call Only mode

The scanner stops the current operation and only performs Close Call checks as described above.

For more information about key operation and other specifics about Close Call Only mode:

- BCD396XT or BC346XT: Handheld Scanner Close Call Only Mode
- BCD996XT: BCD996XT Close Call Only Mode
- BCT15X: BCT15X Close Call Only Mode

To enter Close Call only mode on the BCD396XT or BC346XT, **FUNCTION +** press & hold **HOLD**.

To enter Close Call only mode on the BCD996XT, press and hold the **SQ** knob.

To enter Close Call only mode on the BCT15X, **FUNCTION +** press & hold the **SQ** knob.

Close Call Do Not Disturb mode

When set in this mode, the scanner will periodically make Close Call checks whenever the scanner is not receiving audio in another mode. This eliminates the annoying breaks in conversation while still allowing for the Close Call functionality. In Close Call Do Not Disturb mode, the Close Call icon appears in reversed color.

For more information about key operation and other specifics about Close Call Do Not Disturb mode:

- BCD396XT or BC346XT: Handheld Scanner Close Call Mode
- BCD996XT: BCD996XT Close Call Mode
- BCT15X: BCT15X Close Call Mode

To enter Close Call Do Not Disturb mode on the BCD396XT or BC346XT, **FUNCTION +** repeatedly press **HOLD** until Close Call DND appears

To enter Close Call Do Not Disturb mode on the BCD996XT, repeatedly press the **SQ** knob until Close Call DND appears.

To enter Close Call Do Not Disturb mode on the BCT15X, **FUNCTION +** repeatedly press the **SQ** knob until Close Call DND appears.

Priority Scan mode

At a specified interval, the scanner interrupts its current operation, checks the user-designated conventional priority channels, then resumes the previous operation. You can

set the interval for priority scan checks. If

For more information about key operation and other specifics about Priority Scan mode, see Priority Scan.

To enter Priority Scan mode on the BCD396XT or BC346XT:

1. Enter Hold mode.
2. **FUNCTION** + tap **NO**.

To enter Priority Scan mode on the BCD996XT, press **PRI** while scanning.

To enter Priority Scan mode on the BCT15X, **FUNCTION** + press **POL/ PRI** while scanning.

If no conventional channels in enabled and unlocked systems are designated as priority, the scanner will display *Priority Scan No Channel*.

For trunked priority channels, you need to enable priority scanning in the system option menu as well as tagging the channel as priority. Trunked priority only works while scanning that system's control channel or (in the case of Motorola systems) when the scanner is scanning any channel in the system.

Priority Plus Scan mode

The scanner stops the current operation and only performs Priority Scan checks as described above.

To enter Priority Plus Scan mode on the BCD396XT or BC346XT:

1. Enter Hold mode.
2. **FUNCTION** + repeatedly tap **NO** until the scanner displays *Priority Mode Plus On*.

To enter Priority Plus Scan mode on the BCD996XT, while scanning repeatedly press PRI until the scanner displays *Priority Mode Plus On.*

To enter Priority Plus Scan mode on the BCT15X:

1. Enter Hold mode.
2. **FUNCTION +** repeatedly tap **POL/PRI** until the scanner displays *Priority Mode Plus On*.

GPS mode

(Requires a connected GPS receiver.) The scanner displays longitude, latitude, and heading information.

For more information about key operation and other specifics about GPS mode:

- For the BCD396XT or BC346XT: Handheld GPS Mode
- For the BCD996XT: BCD996XT GPS Mode
- For the BCT15X: BCT15X GPS Mode

To enter GPS mode on the BCD396XT or BC346XT, **FUNCTION +** tap **GPS**.

To enter GPS mode on the BCD996XT or BCT15, tap **GPS**.

Weather mode

The scanner checks each of the 10 National Weather Radio channels and opens squelch when it detects a signal. When the signal stops, the scanner continues checking the other weather channels. For more information about Weather Mode, see Weather Mode.

To enter Weather mode on the BCD396XT or BC346XT, **FUNCTION +** press & hold **WX**.

To enter Weather mode on the BCD996XT, press & hold **WX**.

To enter Weather mode on the BCT15X, **FUNCTION +** press and hold **GPS/WX**.

Weather Priority Mode

In Weather Priority mode, the scanner interrupts scanning every 5 seconds to check for an alert. If an alert tone is present, the scanner sounds an alert tone, then stays on the weather channel so you can hear the alert. For more information about Weather Priority Mode, see Weather Mode.

To enter Weather Priority mode on the BCD396XT or BC346XT, **FUNCTION** + tap **WX**.

To enter Weather Priority mode on the BCD996XT, tap **WX**.

To enter Weather Priority mode on the BCT15X, **FUNCTION** + tap **GPS/ WX**.

Weather Alert mode

This is similar to Weather mode: the scanner checks each of the 10 National Weather Radio channels and stays on a channel when it detects a signal. However, in Weather Alert mode, the scanner only opens squelch if it detects the EAS alert tone. For more information about Weather Alert Mode, see Weather Mode.

To enter Weather Alert mode on the BCD396XT or BC346XT:

1. Enter Weather mode.
2. **FUNCTION**+ tap **WX**.

To enter Weather Alert mode on the BCD996XT:

1. Enter Weather mode.
2. Tap **WX** .

To enter Weather Alert mode on the BCT15X:

1. Enter Weather mode.
2. **FUNCTION** + tap **GPS/WX**.

Tone Out mode

The scanner checks up to 10 user-programmed channels for two-tone sequential, single, or group paging tones. When it detects a tone that matches the configuration for that channel, the scanner displays the tone information and opens squelch. For more information about Tone Out Mode:

- BCD396XT or BC346XT: Hand Held Tone-Out Mode
- BCD996XT: BCD996XT Tone-Out Mode
- BCT15X: BCT15X Tone-Out Mode

To enter Tone Out mode, tap **MENU** , then scroll down and select *Tone-Out for...*
To exit Tone Out mode, enter Scan mode.

Band Scope mode

The scanner searches a frequency ranges and displays a visual representation of the signal level. For more information about Band Scope Mode:

- BCD396XT or BC346XT: Hand Held Band Scope Mode
- BCD996XT: BCD996XT Band Scope Mode
- BCT15X: BCT15X Band Scope Mode

To enter Band Scope Mode:

1. Set one of the 3 search keys to a Band Scope search.
2. Enter Search mode.
3. Press & hold the designated search key.

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Menu tree

BCD996XT main menu

- Program System
- Program Location
- Srch/CloCall Opt
- Search for...
- Close Call
- Priority Scan
- WX Operation
- Tone-Out for...
- Wired Clone
- Settings

Using the menu

- To open the menu, tap **MENU** .
- Turn the **SELECT** knob to move the cursor and highlight menu items. The currently highlighted item appears in reversed-out text.
- To select the highlighted item or confirm an option setting, tap **E-YES** or press down on the **SELECT** knob.
- To cancel an option setting, press **NO** .
- To go back one level in the menu, tap **MENU** .
- To exit the menu, press **LOCKOUT** . The scanner goes back to the operating mode it was in before you entered the menu.

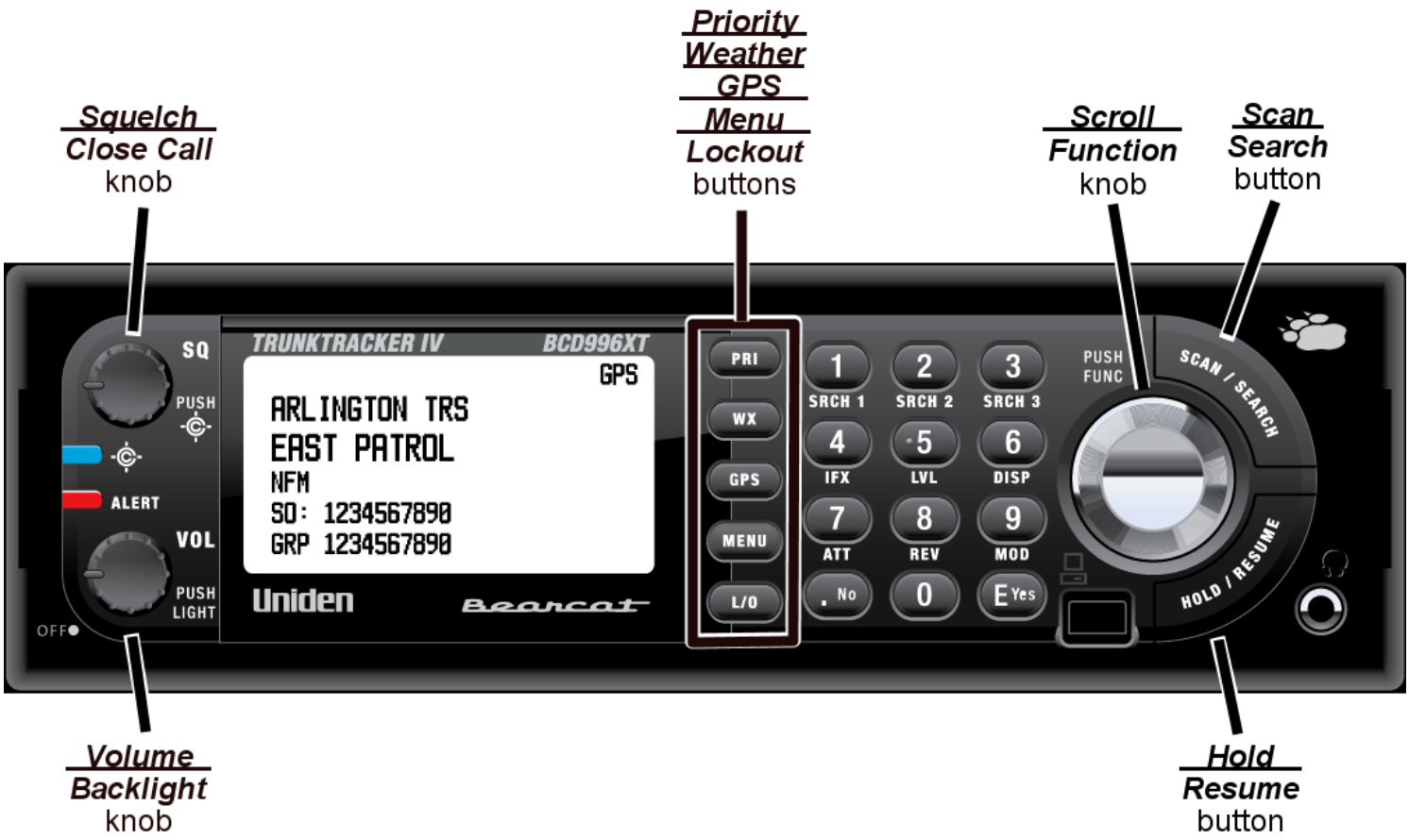
This page applies to the following scanner(s): BCD996XT Users Guide

Keys and their functions

- Key Overview
- Operating the controls
  - Using the FUNCTION button
- Key functions in different operation modes

Key Overview

The diagram below shows the keys and what they are called throughout the guide:



Operating the controls

Each button has at least two different actions which you control using the key combinations explained below.

- *Tap* : press the button and release it immediately
- *Double tap* : press the button twice, as quickly as possible (within 1 second)
- *Press & hold* : press the button and keep it pressed for at least 2 seconds before releasing it
- **FUNCTION** + *tap* : press and release **FUNCTION** , then tap the button
- **FUNCTION** + *Double tap* : press and release **FUNCTION** , then double tap the button
- **FUNCTION** + *Press & hold* : press and release **FUNCTION** , then press and hold the button

Using the FUNCTION button

When you tap FUNCTION (the scroll knob), the scanner remembers the **FUNCTION** + key combination for the next 3 seconds; during this time, it displays an *F* icon at the top of the screen.

If you want the scanner to maintain the **FUNCTION** + key combination longer, press & hold FUNCTION. The scanner remembers the **FUNCTION** + key combination until the next time you tap FUNCTION; during this time, it displays *Function Key Holding* and flashes the *F* icon at the top of the screen.

Key functions in different operation modes

The keys have different functions in each operation mode:

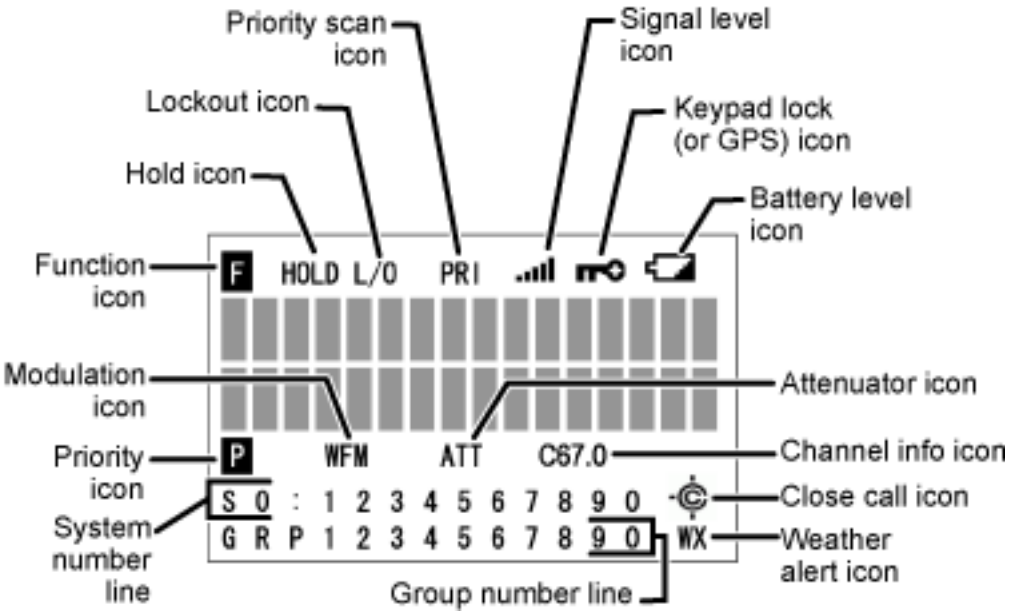
- Scan and Search mode key functions
- Hold mode key functions
- Close Call mode key functions
- Priority Scan mode key functions

- GPS mode key functions
- Tone Out mode key functions
- Band Scope mode key functions
- Available functions in Key Safe mode

This page applies to the following scanner(s): BCD996XT Users Guide

Reading the display

The display icons vary depending on the status of the scanner and what youre doing at any given time. The diagram shows common icon locations, and table below lists the most common icons and their meanings:



Attenuator icon	Steady: The attenuator is turned on for the current channel.
	Blinking: The attenuator is turned on globally (for all channels).
Battery level icon	x.xx: The remaining battery voltage is displayed in place of the Xs.
	Blinking icon: The battery is low. (If the AC adapter is connected while the icon is blinking, the battery is incorrectly installed, is the wrong type, or has gone bad.)

Channel info icon	This icon has several available states: • P25: The received signal is digitized voice (APCO P25) • LNK: The current channel is configured as a voice channel, but the scanner is receiving data on it. • DAT: The current channel is configured as a control channel, and the scanner is receiving data on it. • ENC: The received signal is encrypted P25 digitized voice, and the scanner has muted the audio. • Cxx.x: The scanner has detected a CTCSS code; the received code is displayed in place of the Xs. • DCSxxx: The scanner has detected a DCS code; the received code is displayed in place of the Xs. • PNxxxx: The scanner has detected a P25 network address code (NAC); the received code is displayed in place of the Xs.
Close call icon	Normal (open) icon: • Steady: Close call priority mode is on. • Blinking: Close Call Only mode is on, or the scanner has detected a close call signal.
	Reversed (filled) icon: • Steady: Close call DND mode is on. • Blinking: Close call DND mode is on, and the scanner has detected a close call signal.

Function icon	Steady: You tapped the **FUNCTION** key; the scanner will remember the **FUNCTION** + key combination for the next 3 seconds.
	Blinking: You pressed & held the **FUNCTION** key: the scanner will remember the **FUNCTION** + key combination until you tap **FUNCTION** again.
Group number line (GRP)	In Scan mode: The group Quick Key numbers (GQK) of any unlocked groups in the current system or site are displayed on this line. The GQK number of the group that is currently being scanned blinks.
	In Hold mode: This line displays the GQK number of the current group only.
	In Custom Search mode: The numbers of any programmed search ranges are display on this line. The number of the custom range that is currently being searched blinks.
Hold icon	The scanner is in Hold mode.
IFX icon	You switched to the intermediate frequency (IF exchange).
Keypad lock (or GPS) icon	: The keypad is locked.
	GPS: The scanner is receiving data from the GPS device.
Lockout icon	The current channel is locked out.
Modulation icon	This icon displays the modulation type of the current channel: AM, FM, NFM, FMB, or WFM.
Priority icon	The current channel is set as a priority channel.
Priority scan icon (PRI)	Steady: Priority scan is turned on.
	Blinking: Priority Plus scan is turned on.
REP icon	The Repeater Find feature is turned on.

Signal level icon	This icon displays the strength of the current signal; the icon ranges from zero bars (no signal) to five bars (strong signal).
System number line (Sx:)	In Scan mode: The system/site Quick Key numbers (SQK) of any unlocked systems or sites are displayed on this line. The SQK number of the system or site that is currently being scanned blinks. For SQK numbers above 9, the tens digit replaces the X in the icon; the ones digits are shown on this line.
	In Hold mode: This line displays the SQK number of the current system or site only. For SQK numbers above 9, the tens digit replaces the X in the icon; the ones digit is displayed on this line.
	In Service Search mode: The icon SCR replaces the System numbers if the broadcast screen feature is turned on.
Weather alert icon	Weather Alert Priority scan is turned on.

Special displays

In some operation modes, the display can be very different from the main display. These modes also have 2 or 3 different displays you can cycle through.

- Band Scope mode display
- Hold mode displays
- GPS mode display

This page applies to the following scanner(s): BCD396XT Users Guide

- Included With Your Scanner
- Setting Up Your Scanner
  - Power Related Issues
  - Base Station
  - Setting Up an Audio Recording Device or Computer Recording
  - Vehicle Installation
    - Mounting Using the Bracket
    - Mounting Using the DIN-E Sleeve (Option for BCT15X)
    - Removing the Scanner from the DIN-E Sleeve
    - Mounting Using ISO Technique
  - Removing the Display Sticker
  - Connecting an Optional Antenna
  - Connecting an Earphone/Headphone
  - Connecting an Extension Speaker

Included With Your Scanner

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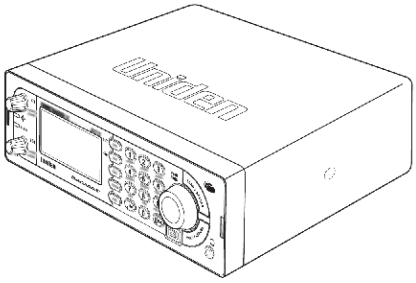
<td> 
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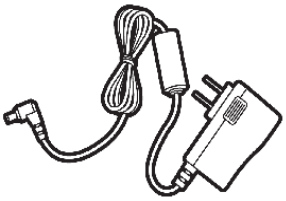
<td> 
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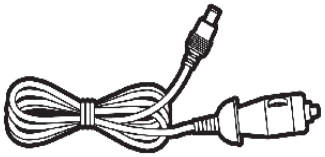
<td> 
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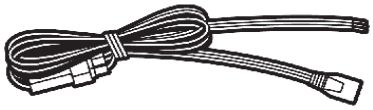
<td> 
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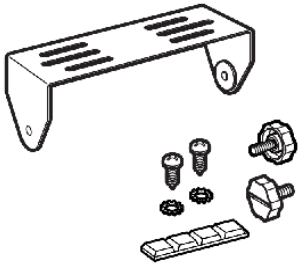
<td> 
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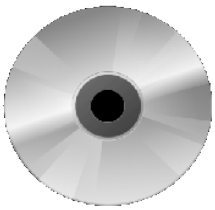
<td> 
O/M on CD ROM</td>
<td>
Other Printed Materials</td>
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Setting Up Your Scanner

These guidelines will help you install and set up your new scanner:

The scanner can be placed on a convenient surface in your home as a base station, and connected to a standard outlet that supplies 120VAC, 60Hz. You must use either the supplied antenna or an electrically correct outdoor antenna, properly and safely mounted at your chosen site.

The scanner is also designed to accommodate either DIN-E and ISO-DIN automotive mounting configurations. A DIN-E sleeve and keys, (Part Number DIN-0001) are optional and available from Uniden.

The unit can also be placed above, beneath, or in the dash of your vehicle using the supplied bracket and mounting hardware.

- If your scanner receives interference or electrical noise, move the scanner or its antenna away from the source.
- To improve the scanner's reception, use an optional external antenna designed for multi-band coverage. (You can purchase this type of antenna at a local electronics store). If the optional antenna has no cable, use 50-75 Ω coaxial cable for lead-in. A mating plug might be necessary for the optional antennas.
- Use an optional mono earphone or mono headset with proper impedance (32 Ω) for private listening. Read the precautions at General Precautions.
- Do not use the scanner in high-moisture environments such as the kitchen or bathroom.
- Avoid placing the scanner in direct sunlight or near heating elements or vents.

Power Related Issues

Important: To prevent memory from being corrupted, do not unplug the AC adapter during the time the memory is accessed for programming or auto store.

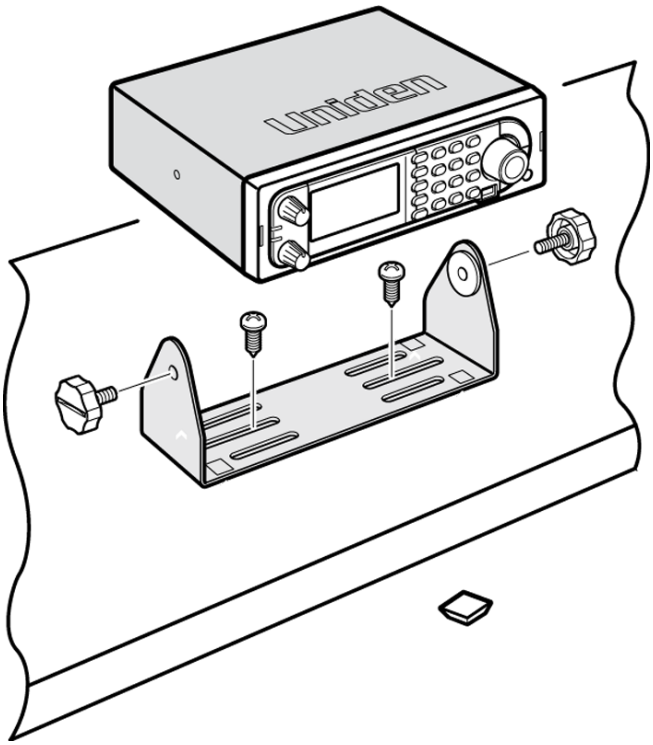
Notes:

- If when you connect the AC adapter the [VOL] /Power Switch is ON, the scanner may not power on. Should this occur, simply turn the control OFF, then ON again.
- If the scanner loses power (as when you turn off your car's ignition with the scanner's power switch on), it can lose some system settings such as display color and backlight. To ensure that such settings persist, either change thesetting using the scanner's menu or power the scanner off then back on using the power switch after making such setting changes.

When you turn off the scanner using the power switch, the scanner remembers the last settings and mode. When you turn power back on, it resumes the previous mode.

Base Station

This is the simplest approach to let you get started quickly. Decide on a location that is convenient to a nearby wall outlet, has desk space to let you complete your programming worksheets, will safely allow the indoor antenna to be extended, or near a window to use an outdoor antenna.



To secure the radio to a surface, by means of the mounting bracket, follow the steps below:

1. Attach the four protective mounting feet to the mounting bracket when you casually use the scanner on a flat surface. Should you desire to permanently mount the scanner, remove the feet and use wood screws through the bracket as described in Steps 2 and 3.
2. Use the bracket as a template to mark positions for the two mounting screws.

3. At the marked positions, drill holes slightly smaller than the screws.
4. Align the bracket with the threaded holes on the sides of the radio case so the bracket is beneath the radio. Secure the bracket using the two threaded knobs. Never overtighten the knobs.

Once the radio is positioned, connect it to a source of AC power using the supplied 13.8V, 750 mA AC adapter. Insert the barrel of the AC adapter to the jack on the rear, upper right side of the radio marked. Insert the connector of the supplied indoor telescoping antenna to the BNC Antenna Connector and apply moderate pressure to secure it.

Setting Up an Audio Recording Device or Computer Recording

It is best if you plan ahead when you initiate the basic setup of the scanner if you include the components to record incoming reception. You need an audio recording device which can be controlled by a Voice Operated module (VOX) either externally or from within the unit and the correct connecting cable. The REC (record) jack on the rear apron provides a constant-level audio output which is not affected by the setting of the volume control. Use a mono or stereo cable that ends in a 3.5mm plug for the scanner. The recorder might have its own requirements as to the proper plug. Check the recorder's instructions to be sure. Connect the cable to an external or internal VOX control so that the recorder operates when audio is present.

You can also connect the cable to the appropriate input jack on your PC so that with controlling software, you can record to your hard disk.

In order for the function to operate, you must set the channel to record. You must also set the system's record option to either All Channel, which will record all channels regardless of any channel's setting, or Marked Channel which only lets recording occur if you have selected record for that channel. Which you choose will depend on various factors.

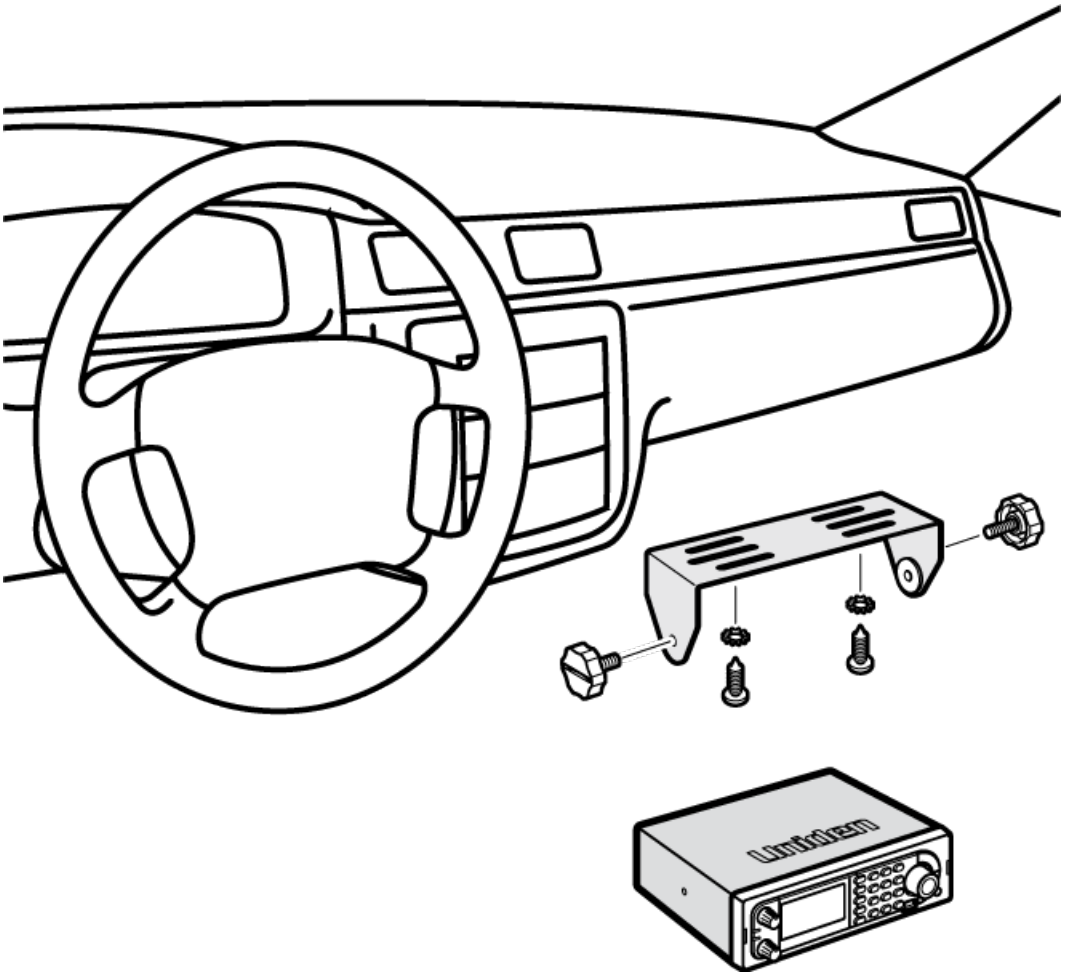
Vehicle Installation

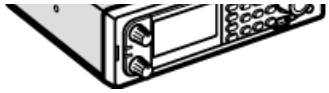
You can mount your scanner in your vehicle, using either the supplied bracket or the optional DIN-E sleeve.

Mounting Using the Bracket

With the bracket removed from the radio, use the holes in the bracket as a template to initially mark the location you plan to use in your vehicle. Be absolutely certain of what might be behind the mounting surface before making any holes, be it above, or below, or in front of your dash, armrest console, or other location. If you drill carelessly, expensive damage can result. If in doubt, consult your vehicle dealer's service department or a qualified professional installer.

Important: ***AVOID AIRBAG DEPLOYMENT ZONES***. Ignoring this installation concern may result in bodily harm and the inability of the airbag to perform properly.



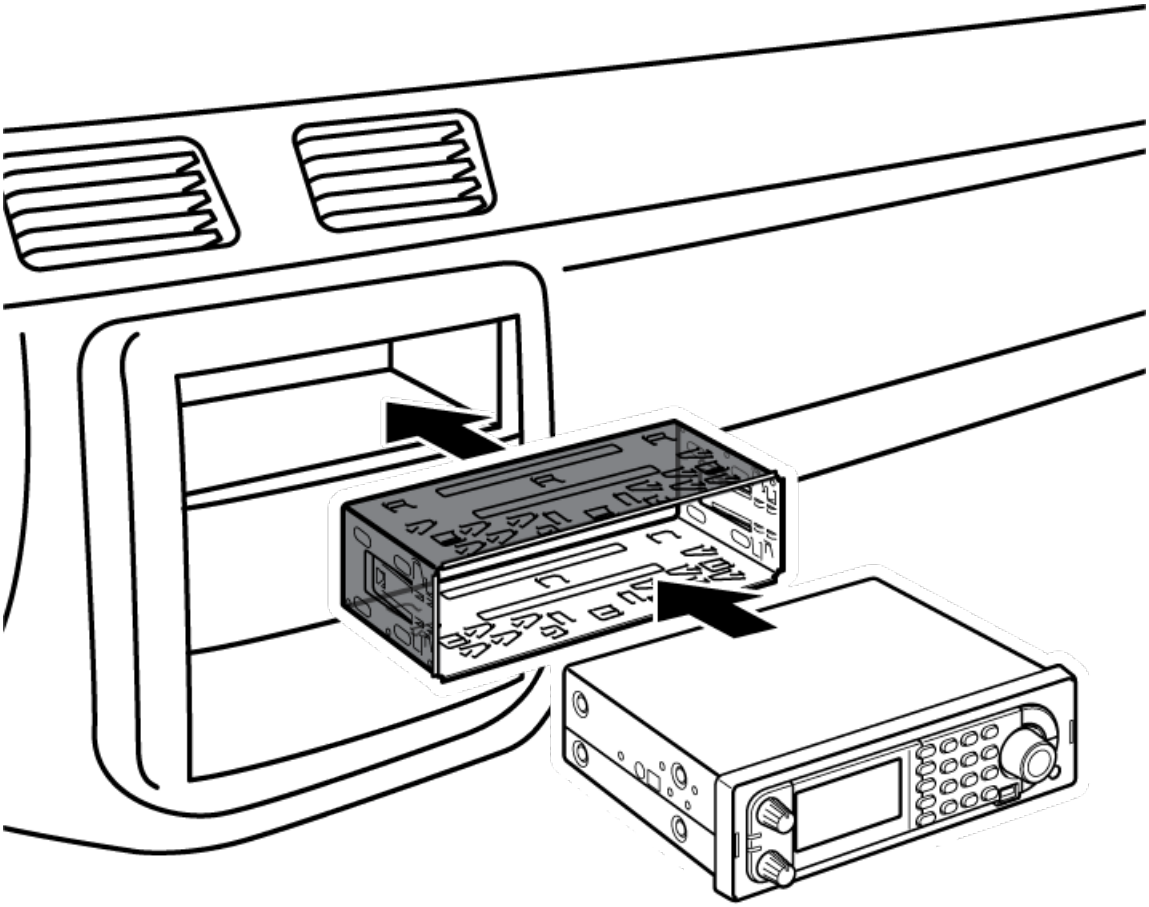


1. Using appropriate screws or other hardware, secure the bracket.
2. Insert the scanner and insert the bracket knobs to lock the scanner in position.
3. Attach the Cigarette Lighter Power Cord to the rear of the scanner and plug the adapter end into a dash mounted 12V DC socket.
4. Attach a suitable mounted mobile antenna to the antenna jack on the back of the scanner.

Mounting Using the DIN-E Sleeve (Option for BCT15X)

If you are unsure about how to install your scanner in your vehicle using the optional DIN-E sleeve, consult your automobile manufacturer, dealer, or a qualified installer. Before installing, confirm that your scanner fits in the desired mounting area and you have all the necessary materials to complete the task. Your scanner requires a 2 x 7-1/8 x 5-5/16 inch (50 x 180 x 135 mm) mounting area. Allow an additional 2-3/8 inch (60mm) space behind the unit for connectors and wires.

To purchase the DIN-E sleeve and included Removal Keys, visit http://www.unidendirect.com/ and order part number, DIN-0001.



1. Remove the bracket if it is attached.
2. Remove the four Philips screws from four small tabs on the rear of the case that secure the outer metal case and pull off the case (toward the rear) with care.
3. Install the DIN sleeve into the opening in your dashboard, lip facing out.
4. Push out the top and bottom tabs to hold the sleeve firmly in place.
5. Before inserting the scanner in the sleeve, attach the cable from the previously mounted antenna. Attach the DC Power leads. RED goes to a positive (+) connection on your fuse block while BLACK connects to the vehicle's chassis ground (-).
6. Connect the ORANGE lead to one side of the headlamp switch so that when you activate the headlights, the scanner's LCD display changes intensity. Be sure all the connections are routed away from any potentially pinching or slicing sheet metal.
7. Slowly slide the scanner into the sleeve until it locks in place.
8. To remove the unit, fully insert the removal keys into each slot on the left and right edges of the front panel. Carefully slide the radio from the sleeve.

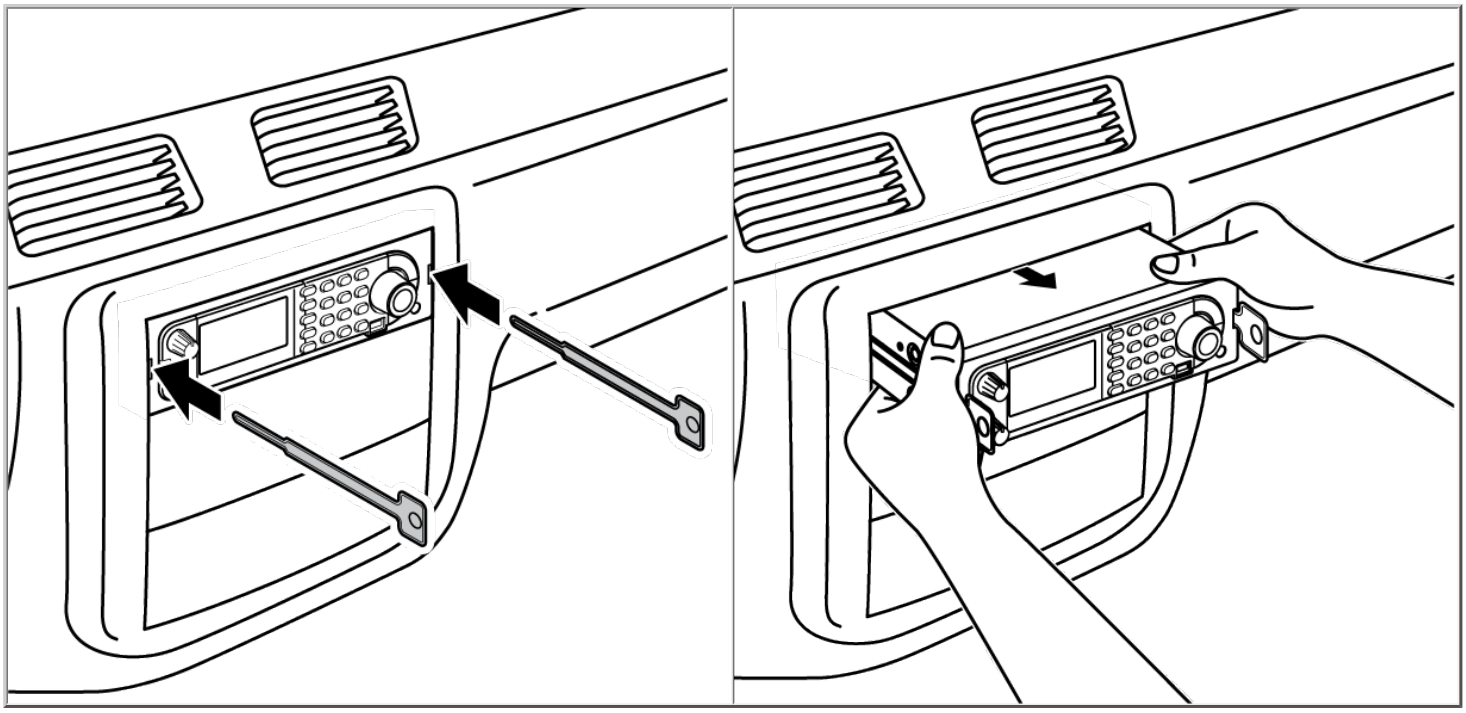
Note: If you plan to connect a GPS unit or external speaker at a later time, expect to remove the unit for ease of making those connections.

Removing the Scanner from the DIN-E Sleeve

If you plan to connect other devices or wires to the radio, such as a GPS unit, at a later time, you should plan to remove the scanner from the DIN-E sleeve. This is easily done using the provided Removal Keys that come with the optional DIN-E sleeve.

Refer to the illustration that follows, showing the Removal Keys.

Fully insert both Removal Keys into the slots on the left and the right edges of the radio's dress panel. You cannot remove the radio with only one key. Press in fully,and do not twist the keys. The radio will unlock from the sleeve making withdrawal from the sleeve possible. Store the keys in a safe place for future use.



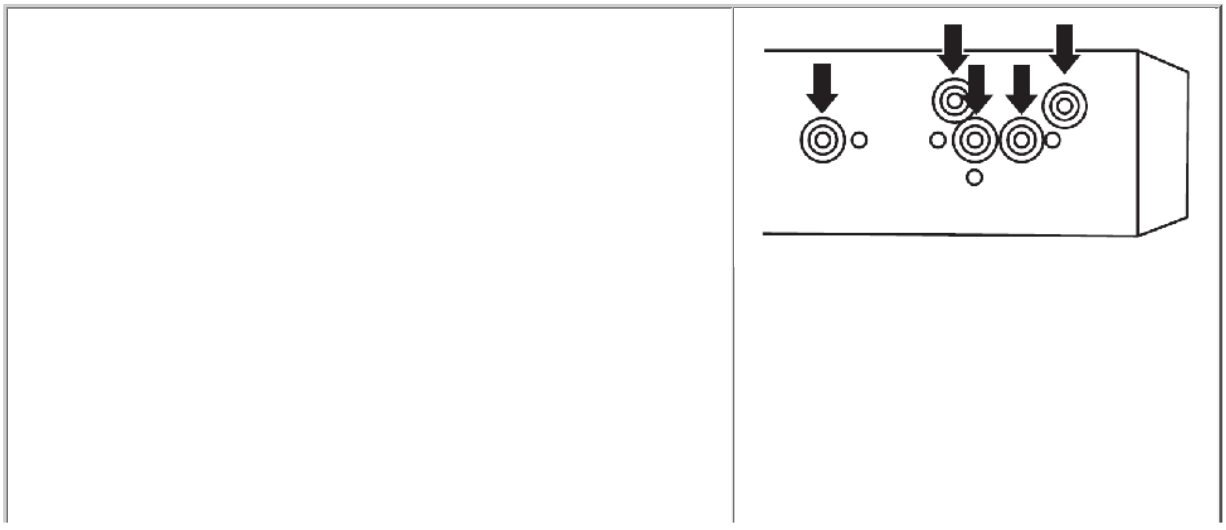
Mounting Using ISO Technique

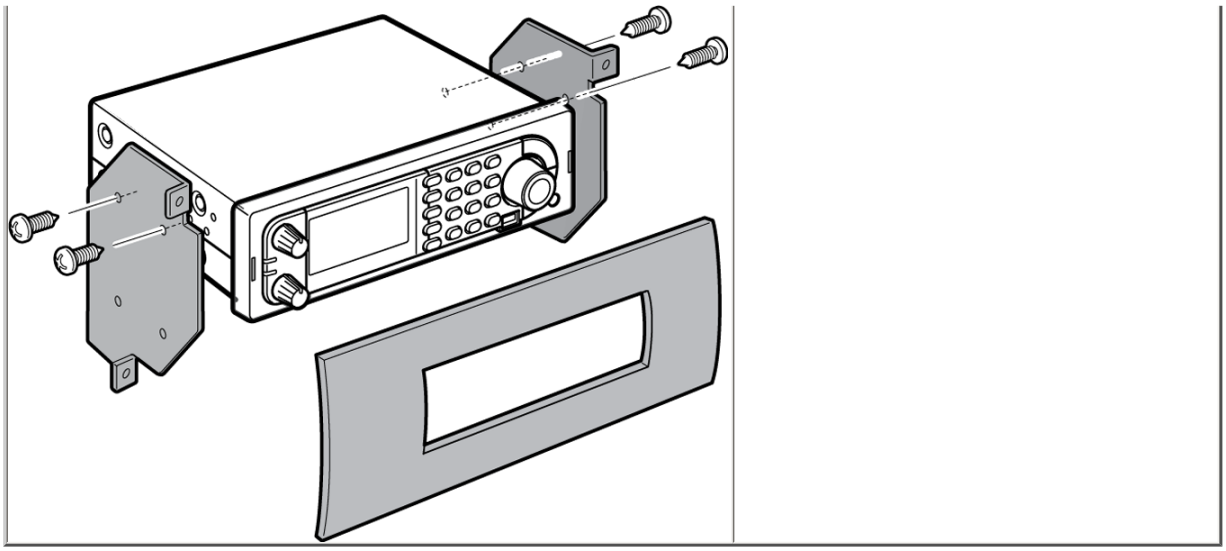
Some vehicles can take advantage of another approach to mounting a radio in a vehicle, called the ISO technique. However, this technique requires a very detailed and thorough knowledge of the technique. Therefore, we strongly suggest that if you have any doubt about your experience and abilities, please consult with a professional installer who is familiar with the ISO approach to radio installation.

To begin the process, it is first necessary to remove the scanner's outer metal sleeve from the inner chassis. Unthread the four screws in the rear of the unit. Slide the cover toward the rear and off. Once the sleeve is removed, you will see threaded, metric machine screw holes on either side of the chassis cabinet. Uniden does not supply these screws. Their diameter, length, and screw type should be chosen by a qualified installer based on the internal vehicle bracket which will be used in securing the scanner chassis.

Once the original radio is removed from the vehicle dash and the fit of the scanner is correct, be sure to connect all the power, audio, antenna, and any other cables or wires, to the scanner before the scanner is secured.

The following illustration is a typical example of the ISO technique and the general side mounting screw holes often encountered. It does not actually represent the Uniden scanner nor your vehicle's mounting bracket. Only a professional installer will be able to determine the best and correct approach.





Removing the Display Sticker

Before you use the scanner for the first time, remove the protective plastic film over the display.

Connecting an Optional Antenna

The scanner's BNC connector makes it easy to connect a variety of optional antennas, including an external mobile antenna or outdoor base station antenna.

Note: Always use 50- or 75-ohm, RG-58, or RG-8, BNC terminated coaxial cable to connect an outdoor antenna. If the antenna is over 50 feet from the scanner, use RG-8 low-loss dielectric coaxial cable. Cable loss increases with higher frequency.

Connecting an Earphone/Headphone

For private listening, you can plug a 1/8-inch (3.5 mm) mini-plug earphone or headphones (not supplied) into the headphone jack on the front of your scanner. This automatically disconnects the internal speaker. See the Earphone Warning for important information about using an earphone/headphone.

> **WARNING!**
>
> Never connect anything other than the recommended amplified extension speaker to the scanner's headphone jack. Damage to the scanner might occur.

Connecting an Extension Speaker

In a noisy area, an optional amplified extension speaker, positioned in the right place, might provide more comfortable listening. Plug the speaker cable's 1/8-inch (3.5-mm) mini-plug into your scanner's back-panel Ext. Sp. Jack.

> **WARNING!**
>
> Never connect any part of the headphone jack to the antenna jack or connect the radio to an installation where the antenna and audio connection are grounded. This might also damage the scanner.

This page applies to the following scanner(s): BCD996XT BCT15X Users Guide

Connecting a GPS receiver

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

- Compatible GPS receivers
- Configuring your scanner
- Connecting the receiver
- Troubleshooting

Compatible GPS receivers

You can connect your scanner to any GPS receiver that meets the following criteria:

- Outputs NMEA-0183 v3.01-compliant location data
- Outputs both the Global Positioning System Fix (*GGA*) and Recommended Minimum Specific GNSS (*RMC*) data sentences
- Provides a serial data (RS-232) connection

Configuring your scanner

1. Go to the Settings menu and select *Set Serial Port* .
2. Select _Set Baud Rate|.
3. Select *Set Rear Port*.
4. Select *4800* bps for the baud rate.

Connecting the receiver

1. Plug your GPS receiver's RS232 cable directly into the DB9 connector on the back of the scanner.
2. When the scanner recognizes the GPS input, it displays a confirmation message and shows the GPS icon on the display.
3. If the GPS receiver does not have a lock on the satellites, the scanner displays *Searching for Satellite* .

Troubleshooting

If you can't get the scanner to recognize the GPS receiver:

- Check the receiver's baud rate. Most compatible GPS receivers use a baud rate of 4800 bps, but it's possible your receiver is using a non-standard baud rate. Set the scanner's baud rate to match the GPS receiver's.
- Check the receiver's output mode. Some receivers have proprietary signalling modes that are not NMEA compliant, but you can usually set them to use a NMEA compliant mode.

If the scanner recognizes the GPS receiver but doesn't lockout systems as you expected:

- Make sure the GPS receiver has a lock on the satellites.
- Check the location configuration for the sites and channel groups in the system.
    1. For each site or channel group, go to the Set LocationInfo menu.

2. Check the range, latitude, and longitude settings to make sure they are correct.
3. Make sure the *Set GPS Enable* option is set to *Yes* .

This page applies to the following scanner(s): BCD996XT BCT15X Users Guide

Number Tags

- Number Tags let you quickly navigate to a specific system or channel.
- You can assign Number Tags at the system level (*System Number Tag* , or *SNT*), at the channel level (*CHannel Number Tag* , or *CHNT*), or at both levels.
- You can assign an SNT to the temporary system *Close Call Hits* that is created during Close Call searches. This system and its SNT operate like any other system.
- You can assign Number Tags to service searches and custom search ranges. These search Number Tags operate like regular SNTs.

- Programming Number Tags
  - Assigning an SNT
  - Assigning a CHNT
- Using Number Tags

Programming Number Tags

Assigning an SNT

- SNTs can range from *0* to *999* .
- No two systems can have the same SNT. (This includes SNTs assigned to the Close Call Hits system or any search ranges.)

To a system :

1. Open the Program System menu.
2. Select the system you want to assign the number tag to.
3. Select Edit Sys Option, then select Set Number Tag.
4. Enter the number tag you want to use for this system.

To the Close Call Hits system :

1. Open the Close Call menu.
2. Select Hits with Scan, then select Set Number Tag.
3. Enter the number tag you want to use for the Close Call Hits system.

To a service search range :

1. Open the Search for... menu.
2. Select Edit Service, then select the service search range you want to assign the number tag to.
3. Select Search with Scan, then select Set Number Tag.
4. Enter the number tag you want to use for this search range.

To a custom search range :

1. Open the Search for... menu.
2. Select Edit Custom, then select the custom search range you want to assign the number tag to.
3. Select Search with Scan, then select Set Number Tag.
4. Enter the number tag you want to use for this custom search range.

Assigning a CHNT

- You can assign CHNTs to channels even if the system does not have an assigned SNT. However, without an SNT, you can only navigate to these channels from within that system itself.
- CHNTs must be unique within their own system, but you can re-use CHNTs in other systems.
- CHNTs can range from *0* to *999* .

1. Open the Program System menu.
2. Select the system containing the channel you want to assign the number tag to.
3. Select Edit Group, then select the channel group you want.
4. Select Edit Channel, then select the channel you want to assign the number tag to.
5. Select Set Number Tag.
6. Enter the number tag you want to use for this channel.

Using Number Tags

To navigate directly to:	Key Sequence	Example

A system or search range	1. Tap **HOLD**. 2. Enter the SNT + •. 3. Tap **MENU**.	If the SNT is *4* , enter **HOLD** / **4** / • / **MENU**.
A channel in the *current* system	1. Tap **HOLD**. 2. Enter the CHNT. 3. Tap **MENU**.	If the CHNT is *27*, enter **HOLD** / **27** / **MENU**.
A channel in a *different* system	1. Tap **HOLD**. 2. Enter the SNT *followed by the decimal point.* 3. Enter the CHNT. 4. Tap **MENU**.	If the SNT is 4 and the CHNT is *27*, enter **HOLD** / **4** / • / **27** / **MENU**.

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Quick Keys

- Quick Keys let you enable or disable systems and channel groups during a scan. Disabled systems and channel groups are ignored during scans.
- You can assign Quick Keys at the system/site level (*System/site Quick Key* , or *SQK*), at the channel group level (*Group Quick Key* , or *GQK*), or at both levels.
- You can assign an SQK to the temporary system *Close Call Hits* that is created during Close Call searches. This system and its SQK operate like any other system.
- You can assign Quick Keys to service searches and custom search ranges. These search Quick Keys operate like regular SQKs.

- Programming Quick Keys
  - Assigning an SQK
  - Assigning a GQK
- Using Quick Keys
  - To use SQK 0 through 9
  - To use SQK 10 through 99
  - To use a GQK

Programming Quick Keys

Assigning an SQK

- Multiple systems, sites, and search ranges can share the same SQK.
- All systems and sites assigned to the same SQK will be enabled (or disabled) when you enter the Quick Key.
- SQKs range from *0* to *99* .

To a conventional system:

1. Open the Program System menu.
2. Select the system you want to assign the Quick Key to.
3. Select Edit Sys Option, then select Set Quick Key.
4. Enter the Quick Key you want to use for this system.

To a trunked system:

1. Open the Program System menu.
2. Select the system you want to assign the Quick Key to.
3. Select Edit Site, then select the site you want.
4. Select Set Quick Key, then enter the Quick Key you want to use for this site.

To the Close Call Hits system :

1. Open the Close Call menu.
2. Select Hits with Scan, then select Set Quick Key? .
3. Enter the Quick Key you want to use for the Close Call Hits system.

To a service search range :

1. Open the Search for... menu.
2. Select Edit Service, then select the service search range you want to assign the Quick Key to.
3. Select Search with Scan, then select Set Quick Key.
4. Enter the Quick Key you want to use for this search range.

To a custom search range :

1. Open the Search for... menu.
2. Select Edit Custom, then select the custom search range you want to assign the Quick Key to.
3. Select Search with Scan, then select Set Quick Key.
4. Enter the Quick Key you want to use for this custom search range.

Assigning a GQK

- All channels in the channel group will be enabled (or disabled) when you enter the GQK.
- Multiple channel groups in the same system can share the same GQK. However, all of these channel groups will be enabled (or disabled) when you enter the GQK from within that system.
- You can assign GQKs to channel groups even if their system does not have an assigned SQK.

- You can only use GQKs within the current system: the GQK will not affect a channel group in another system.
- GQKs range from *0* to *9* .

1. Open the Program System menu.
2. Select the system containing the channel group you want to assign the Quick Key to.
3. Select Edit Group, then select the channel group you want.
4. Select Set Quick Key, then enter the Quick Key you want to use for this channel group.

Using Quick Keys

- Quick Keys only work in Scan mode.
- Entering the Quick Key toggles the enabled/disabled state of the system/site/ search range or channel group (i.e., if the system is currently enabled, entering the Quick Key will disable it, and vice-versa).

To use SQK *0* through *9*

- Enter Scan mode.
- Tap the number key that matches the SQK. (For example, if the SQK is *4*, just enter **4**.)
- Any systems, sites, or search ranges assigned to this SQK become disabled. (If they were already disabled, they become enabled.)

To use SQK *10* through *99*

- Enter Scan mode.
- Tap the decimal point (**./NO**), then enter the SQK. (For example, if the SQK is *32* , enter **./NO** / **32**.)
- Any systems, sites, or search ranges assigned to this SQK become disabled. (If they were already disabled, they become enabled.)

To use a GQK

- Enter Scan mode.
- Go to the system that contains the channel group you want to enable or disable.

- Tap **FUNCTION** , then tap the number key that matches the GQK. (For example, if the GQK is *7* , enter **FUNCTION** / **7**.)
- Any channel groups assigned to this SQK *within the current system only* become disabled. (If they were already disabled, they become enabled.)

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Search Keys

The scanner has three Search Keys that you can assign to a special search range; the Search Keys are set to number keys **1** , **2** , and **3** :

Search Key 1 Search Key 2 Search Key 3

Programming Search Keys

1. Open the Search for... menu.
2. Select Set Search Key, then select the search key you want to program.
3. Select the search range you want to assign to this Search Key. Choose one of the pre-programmed service search ranges, one of the 10 custom search ranges, a Tone-Out search, or a Band Scope search.

If the Search Key you selected starts a Tone-Out search, the scanner switches to Tone-Out mode and searches the most-recently-used Tone-Out channel (out of the 10 available). If you want to search a different Tone-Out channel, use the **SELECT-VOLUME-SQUELCH** knob to select the Tone-Out channel you want to use.

Using Search Keys

To start the search assigned to a Search Key, **FUNCTION** + tap that Search Key. For example, to start the search assigned to Search Key 2, **FUNCTION** + tap **2** .

(You can't use the Search Keys when the scanner is in Scan mode or GPS mode.)

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Programming locations

To use Location-based Scanning with a particular system, you will need to program your scanner with the geographic coordinates you want to use for each site or channel group. You can also program your scanner to alert you when you approach particular locations.

- Programming a location for a site
- Programming a location for a channel group
- Programming general locations
  - To create a new location
  - For Dangerous Xing and Dangerous Roads only
  - Edit an existing location

Programming a location for a site

Each system site can have separate location information.

1. Open the Program System menu.
2. Select the system you want to program for location based scanning.
3. Select Edit Site, then select the first site you want to assign a location to.
4. Select the Set LocationInfo menu and enter the latitude, longitude, and range for this site.
5. Change the *Set GPS Enable* field to *On* .
6. Go back to the Edit Site menu and repeat these steps with any other sites you want to program for this system.

Programming a location for a channel group

Each channel group in a system can have separate location information.

1. Open the Program System menu.
2. Select the system you want to program for location based scanning.
3. Select Edit Group, then select the first channel group you want to assign a location to.
4. Select the Set LocationInfo menu and enter the latitude, longitude, and range for this site.
5. Change the *Set GPS Enable* field to *On* .
6. Go back to the Edit Group menu and repeat these steps with any other sites you want to program for this system.

   Remember: You have to turn on *Set GPS Enable* before the location information

can effect that site or channel group.

Programming general locations

You can program general locations (i.e., locations that are not associated with a site or channel group). There are three types of general locations:

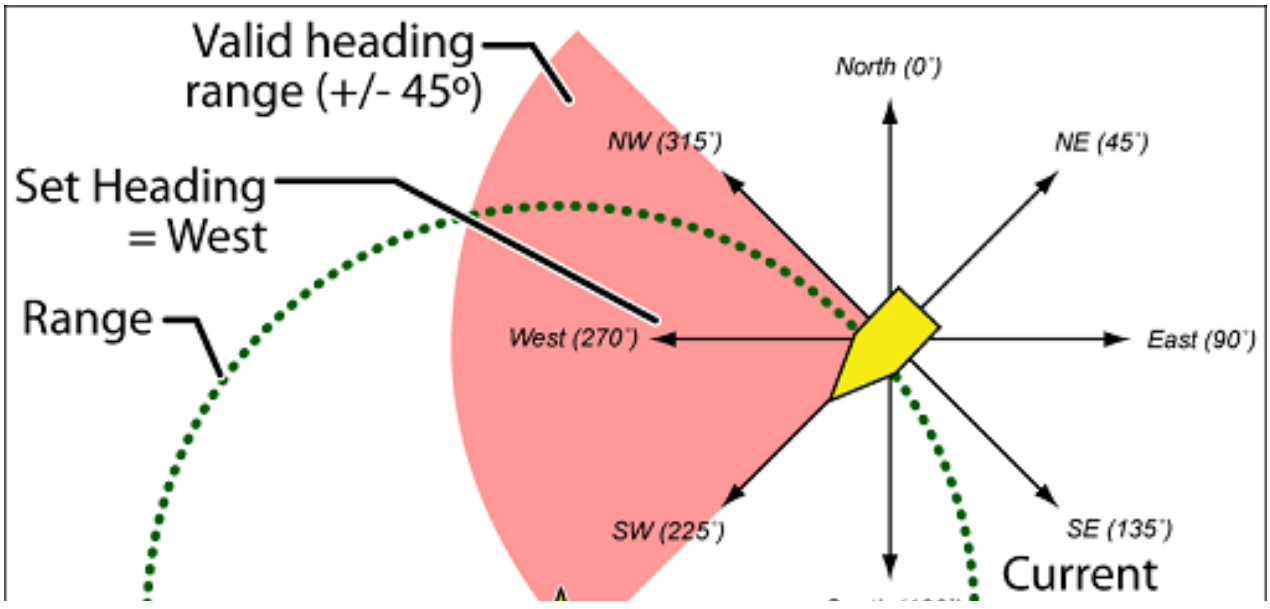
- points of interest (*POI*)
- intersections (*Dangerous Xing*)
- roads (*Dangerous Road*)

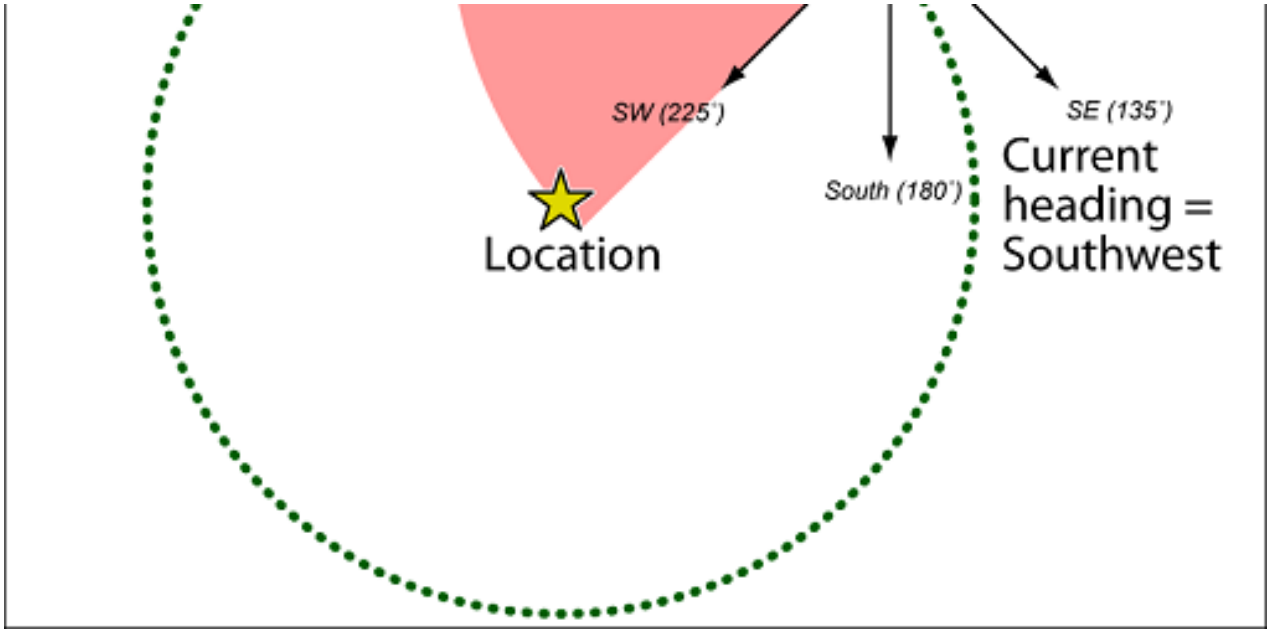
You can program the scanner to alert you when you come within a designated distance of that location.

To create a new location

1. Open the Program Location menu.
2. Select the type of location you want to create.
3. Select *New Location* to create a new location of this type.
4. *If you want to create a different type of location, go back to the Program Location menu and select that location type.
5. If you want to change the default location name, select Edit Name? and enter a new name.
6. Select *Set* LocationInfo? and enter the latitude and longitude for this location.
7. Select *Set Range* and enter the distance from this location you want the scanner to alert you.
8. Choose the *Alert Tone* and *Alert Light* you want the scanner to use when you come within range of this location.

For Dangerous Xing and Dangerous Roads only





In addition to range, you can specify a heading and a speed limit for these types of locations:

- If you set a speed limit, the scanner will only trigger an alert when you are within the location's range *and* your current speed is over the programmed speed limit.
- If you set a heading, the scanner will only trigger an alert when you are within the location's range *and* your current heading is +/- 45 degrees from the programmed heading. (For example, if you set the heading as *North* , the scanner will trigger an alert if your current heading is *North-east* but not if your current heading is due *East* .)

Edit an existing location

1. Open the Program Location menu.
2. Select the type of location you want to edit; the scanner lists the existing locations of that type in alphabetical order.
3. Select the location you want to edit, then change any of the location settings you want.

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Setting alerts

Your scanner can trigger alerts for several different events. The table below shows the different alerts and how to program them:

To sound an alert when	Follow these steps
A channel becomes active	Edit the channel properties (Edit Channel#Set Alert): 1. Go to the *Program System* menu and select the system that contains the channel you want set the alert for. 2. Select *Edit Group* , then select the group you want. 3. Select Edit Channel, then select the channel you want to set the alert for. 4. Select *Set Alert* . 5. Choose the *Alert Tone* and *Alert Light* you want the scanner to use.
An active Talk Group on a system contains an emergency flag	Edit the system properties (Edit Sys Option#Emergency Alert): 1. Go to the *Program System* menu and select the system you want set the alert for. 2. Select Edit Sys Option, then select *Emergency Alert* . 3. Choose the *Alert Tone* and *Alert Light* you want the scanner to use.

The scanner detects a Close Call hit	Edit the Close Call properties: 1. Go to the *Close Call* menu. 2. Select *Set CC Alert* . 3. Choose the *Alert Tone* and *Alert Light* you want the scanner to use. 4. For Close Call Alerts, you can also have the scanner pause before it resumes searching. Select *Set CC Pause* to activate this feature.
The scanner gets a hit on a Tone-Out channel	Edit the Tone-Out channel properties: 1. Go to the Tone-Out for... menu. 2. Select *Tone-Out Setup* , then select the Tone-Out channel you want to set the alert for. 3. Select *Set Alert* . 4. Choose the *Alert Tone* and *Alert Light* you want the scanner to use.
You approach a particular location • Point of Interest(*POI*) • Dangerous Road • Dangerous Intersection (*Dangerous Xing*)	Edit the location properties: 1. Go to the Program Location menu and select the type of location you want set the alert for. 2. Select the particular location. 3. For a POI, select *Set Alert* , then choose the Alert Tone and the Alert Light you want to use. 4. For a Dangerous Road or Xing, the alert tone is preset. Select the Alert Volume and the Alert Light you want to use.

NOTE: The scanner also triggers alerts for Weather Alerts (WX Operation#Weather Alerts), but you can't edit the alert tone and light.

This page applies to the following scanner(s): BCD996XT BCT15X BC346XT BCD396XT Users Guide

Using Quick Keys, Startup Keys, and Search Keys

The different shortcut keys have different functions:

Quick Keys

- Quick keys let you enable and disable systems and channel groups (disabled systems and channel groups are ignored during scans).
- You must be in Scan mode to use Quick Keys.
- System Quick Keys (SQKs) let you enable or disable systems, sites or search ranges: just enter the SQK from the number pad.
- Group Quick Keys (GQKs) let you enable or disable channel groups inside the current system: Tap **FUNCTION** , then enter the GQK from the number pad.

Startup Keys

- Startup Keys let you lock and unlock several systems, sites, and search ranges all at the same time.
- When you activate a Startup Key, the scanner unlocks all systems, sites, and search ranges that are assigned to that same Startup Key; the scanner also locks all systems, sites, and search ranges that are assigned to a different Startup Key.
- To activate a Startup Key, press & hold the number key while you power the scanner on.

Search Keys

- Search Keys let you quickly start one of 3 programmed searches.
- To start the search assigned to a Search Key, **FUNCTION** + tap that Search Key.

This page applies to the following scanner(s): BCD996XT BCT15X BCD396XT BC346XT Users Guide

Tone Out mode

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

With the tone out feature, the scanner monitors up to 10 different channels for paging tones (two-tone sequential, single tone, and group tone). Normally, the scanner monitors each of the 10 channels in turn. However, if any tone-out channels share the same frequency, modulator, and attenuator settings, the scanner checks these channels simultaneously.

Configuring Tone Out channels

To configure Tone-Out channels:

1. Go to the Tone-Out for... menu.
2. Select *Tone-Out Setup* .
3. Select the Tone-Out channel (*Tone-Out 1* through *Tone-Out 10*) you want to configure.
4. Select *Set Frequencies* and choose the frequencies for this channel
5. Select *Set Tone* and program Tone A and Tone B.
6. Set any of the other properties as you prefer (they aren't required).

Required	Frequencies (Set Frequencies) Tone A and Tone B (Set Tones)
Recommended	Name (Edit Name)
Optional	Automatic Gain Control (Set Audio AGC) * Delay Time (Set Delay Time) Alert (Set Alert)

**digital scanners only*

Using Tone-Out Mode

To start a Tone-Out search:

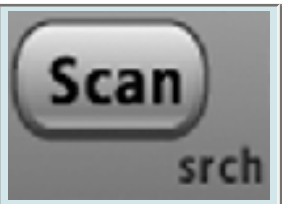
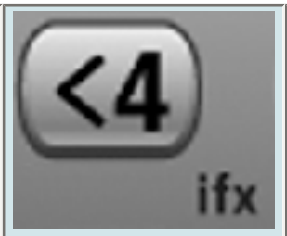
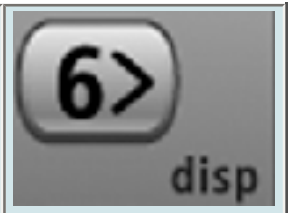
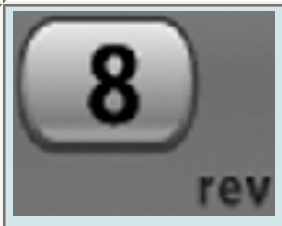
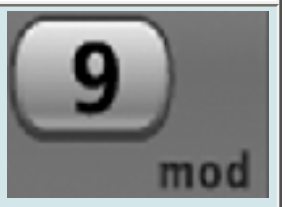
1. Tap **MENU** .
2. Scroll down and select *Tone-Out for...*
3. Select *Tone-Out Standby* to start the search.

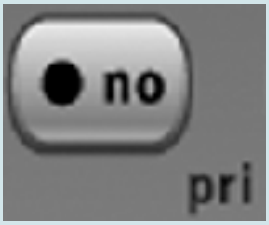
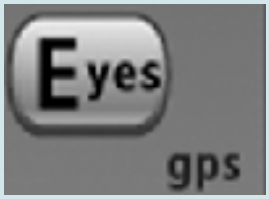
- The scanner starts searching the most recently-used Tone-Out channel (and any other Tone-Out Channels that have the same frequency).
- If you want to search a different channel, just turn the **SELECT-VOLUME-SCROLL** knob until you find the channel you want.
- To exit Tone-Out mode, tap **SCAN** .

Key operation in Tone Out Mode

- Turn the **SELECT-VOLUME-SCROLL** knob to change the channel.
- **FUNCTION +** tap **MENU** to go to the *Tone-Out for...* menu.

Key Name **(2nd operation)** **Action On**	 **HOLD (Close Call)**	 **1 (Search 1)**	 **2 (Search 2)**	 **3 (Search 3)**
Tap	Enter Hold mode (the scanner opens squelch).	Enter the number on the key.		
FUNCTION + Tap	Toggle Close Call modes.	Start the search range assigned to this Search Key.		
FUNCTION + Press & hold	Enter Close Call Only mode.	NA	NA	NA

Key Name **(2nd operation)** **Action on:**	 **Scan (Search)**	 **4 (IF exchange)**	 **5 (Volume offset)**	 **6 (Display mode)**
Tap	Enter Scan mode.	Enter the number on the key		
FUNCTION + Tap	Display the Quick Search screen (enter Search mode).	Switch to the intermediate frequency (IF).	NA	NA
Key Name **(2nd operation)** **Action on:**	 **Lockout**	 **7 (Attenuation)**	 **8 (Reverse freq.)**	 **9 (Modulation)**
Tap	NA	Enter the number on the key.		
FUNCTION + Tap	NA	Toggle the attenuator state for this channel.	NA	Change the modulation.
FUNCTION + Press & hold	NA	Toggle the attenuator state for all signals.	NA	NA

Key Name **(2nd operation)** **Action on:**	 **Backlight (Power, Lock)**	 **No (Decimal, Priority)**	 **0 (Weather)**	 **Yes (Enter, GPS)**
Tap	Turn on the LCD backlight.	During a system message: Cancel the message and exit that screen.	Enter the number on the key.	Edit the current Tone-Out channel.
Press & hold	Turn the scanner on or off.	NA	NA	NA
FUNCTION + Tap	Lock or unlock the keypad.	NA	Change the WX Alert Priority settings.	Enter GPS mode.
FUNCTION + Press & hold	NA	NA	Enter Weather mode.	NA

This page applies to the following scanner(s): BCD396XT BC346XT Users Guide

Close Call mode

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

When the scanner is in Close Call mode, it performs a close call check every 2 seconds. The scanner switches to the selected bands and searches for unusually strong signals (indicating the transmitter is probably somewhere close by). After the close call check, the scanner returns to its previous function.

In *Close Call Do Not Disturb* mode, the scanner does not perform a Close Call check if it is already receiving an audio transmission. This prevents the audio from cutting out every 2 seconds.

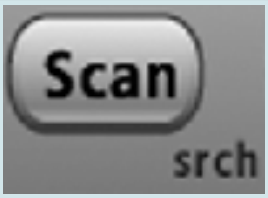
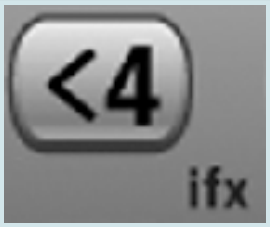
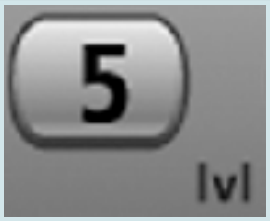
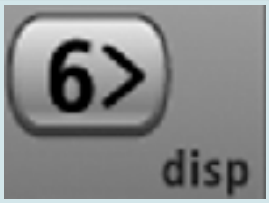
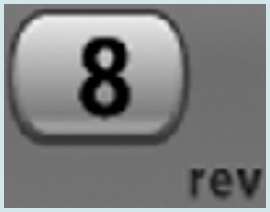
In *Close Call Only* mode, the scanner only performs Close Call checks.

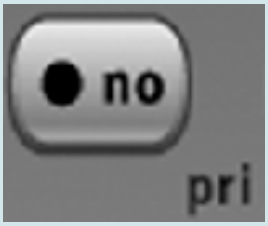
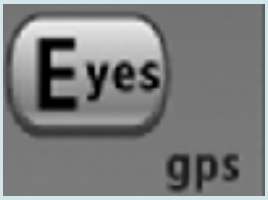
The Close Call menu lets you change the operation settings of the Close Call feature. You can change the overall Close Call options through the Srch/CloCall Opt menu.

Key operation in Close Call Only mode

- Turn the **SELECT-VOLUME-SCROLL** knob to resume searching.
- **FUNCTION +** tap **MENU** to go to the *Close Call* menu.

Key Name (2nd operation) **Action on:**	 **Hold (Close Call)**	 **1 (Search 1)**	 **2 (Search 2)**	 **3 (Search 3)**
Tap	When the scanner detects a Close Call hit: Enter Hold mode.	Disable the Close Call band associated with this key. Tap again to enable.		

FUNCTION + Tap	Toggle Close Call mode.	Start the search assigned to this Search Key.		
Key Name (2nd operation) **Action on:**	 **Scan (Search)**	 **4 (IF exchange)**	 **5 (Volume offset)**	 **6 (Display mode)**
Tap	Enter Scan mode.	Disable the Close Call band associated with this key. Tap again to enable.		
FUNCTION + Tap	Display the Quick Search screen (enter Search mode).	Switch to the intermediate frequency (IF).	NA	NA
Key Name (2nd operation) **Action on:**	 **Lockout**	 **7 (Attenuation)**	 **8 (Reverse freq.)**	 **9 (Modulation)**
Tap	Temporarily lock out the current Close Call frequency (until you turn the scanner off).	Disable the Close Call band associated with this key. Tap again to enable.	NA	NA
Double tap	Permanently lock out the current Close Call frequency.	NA	NA	NA
Press & hold	Unlock all Close Call and Search frequencies.	NA	NA	NA
FUNCTION + Tap	Review the list of locked out IDs.	Toggle the attenuator state for this channel.	NA	Change the modulation.

FUNCTION + Press & hold	NA	Toggle the attenuator state for all signals.	Show the reverse frequency for the current frequency. (The scanner returns to the current frequency when you release the key.)	NA
Key Name (2nd operation) **Action on:**	 **Backlight (Power, Lock)**	 **No (Decimal, Priority)**	 **0 (Weather)**	 **Yes (Enter, GPS)**
Tap	Turn on the LCD backlight.	During a system message: Cancel the message and exit that screen.	NA	When monitoring a Close Call frequency: store the current frequency.
Press & hold	Turn the scanner on or off.	NA	NA	NA
FUNCTION + Tap	Lock or unlock the keypad.	NA	Change the WX Alert Priority settings.	Enter GPS mode.
FUNCTION + Press & hold	NA	NA	Enter Weather mode.	NA

This page applies to the following scanner(s): BCD396XT BC346XT Users Guide

Band Scope mode

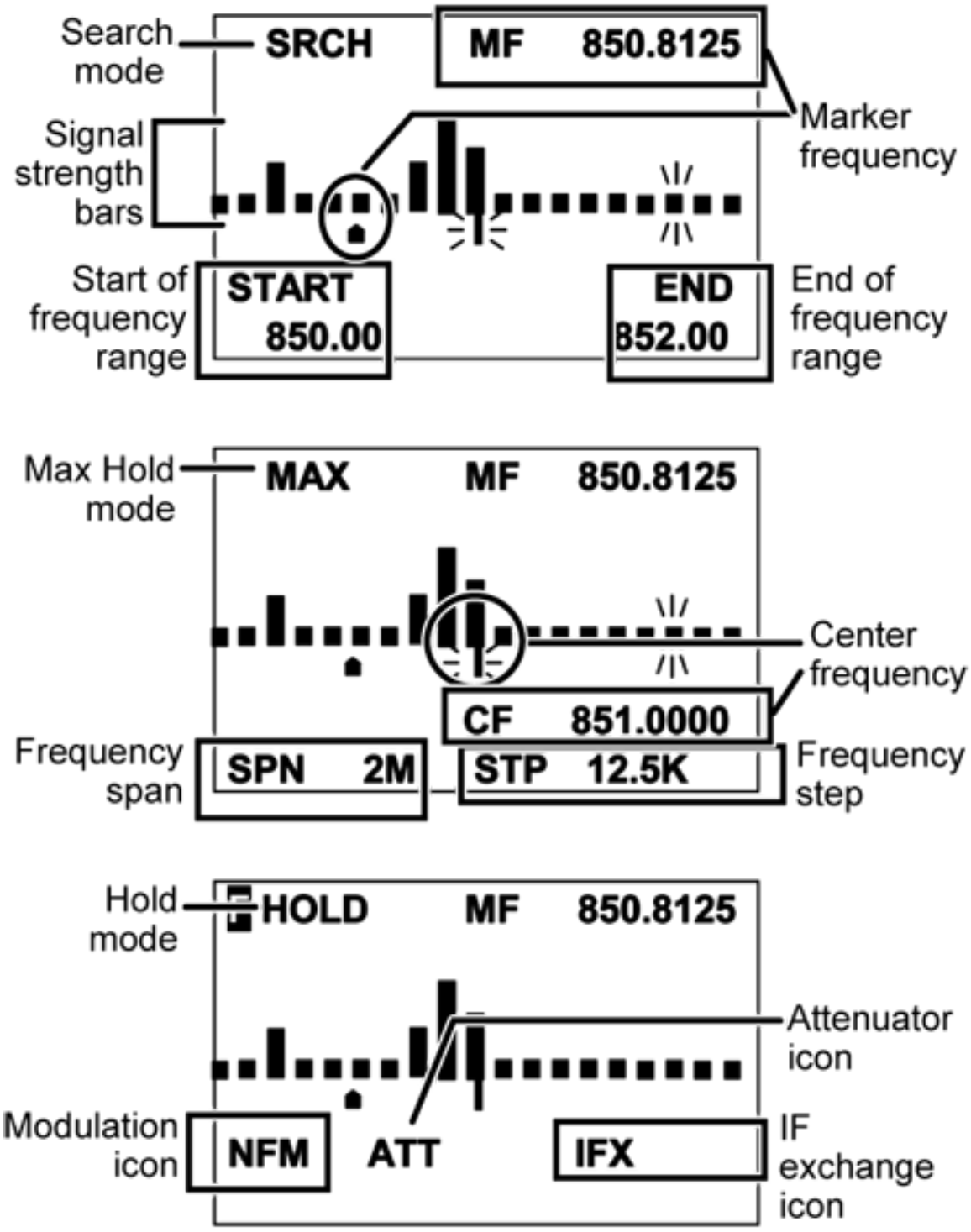
Band Scope mode is a special type of Search mode where the scanner displays the strength of any signal it finds.

- In a band scope search, the scanner starts at the lowest frequency in the range and moves up the search range.
- In *Max Hold* Search mode, the scanner displays the strongest signal that it found.

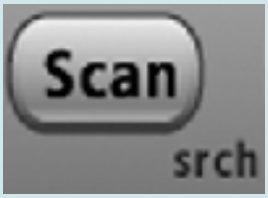
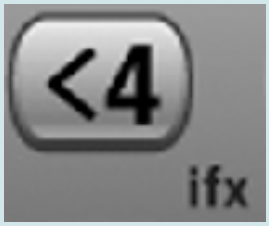
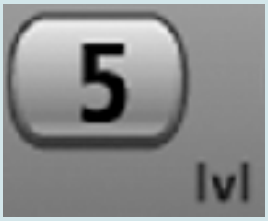
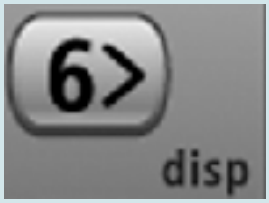
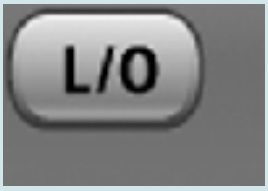
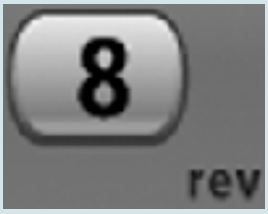
To turn on Band Scope mode:

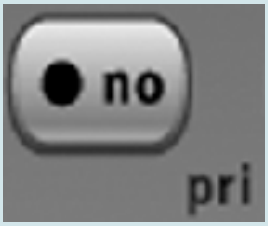
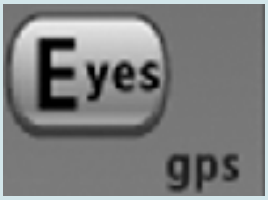
Band Scope mode is the default setting for Search Key 3. To turn on Band Scope mode, enter Search mode, then tap **FUNCTION + 3 (SR3)** . (To change the Search Key assignment, see Search Keys#Programming Search Keys.)

Reading the display in Band Scope mode



Key operation in Band Scope mode

Key Name (2nd operation) **Action on:**	 **Hold (Close call)**	 **1 (Search 1)**	 **2 (Search 2)**	 **3 (Search 3)**
Tap	Enter Hold mode.	NA	NA	NA
FUNCTION + Tap	Toggle Close Call modes.	NA	NA	NA
FUNCTION + Press & hold	Enter Close Call Only mode.	NA	NA	NA
Key Name (2nd operation) **Action on:**	 **Scan (Search)**	 **4 (IF exchange)**	 **5 (Volume offset)**	 **6 (Display mode)**
Tap	Enter Scan mode.	NA	NA	NA
FUNCTION + Tap	Change the band scope search type.	NA	NA	NA
Key Name (2nd operation) **Action on:**	 **Lockout**	 **7 (Attenuation)**	 **8 (Reverse freq.)**	 **9 (Modulation)**
FUNCTION + Tap	NA	Toggle the attenuator state for the current signal.	NA	Change the modulation.

FUNCTION + Press & hold	Unlock all items regardless of type.	Toggle the attenuator state for all signals.	NA	NA
Key Name (2nd operation) **Action on:**	 **Backlight (Power, Lock)**	 **No (Decimal, Priority)**	 **0 (Weather)**	 **Yes (Enter, GPS)**
Tap	Turn on the LCD backlight.	During a system message: Cancel the message and exit that screen.	NA	NA
Press & hold	Turn the scanner on or off.	NA	NA	NA
FUNCTION + Tap	Lock or unlock the keypad.	NA	Change the Weather Alert Priority settings.	Enter GPS mode.
FUNCTION + Press & hold	NA	NA	Enter Weather mode.	NA

This page applies to the following scanner(s): BCD396XT BC346XT UsersGuide

GPS mode

To determine whether the information on this page applies to your scanner, see the tags at the bottom of the page.

You must have a compatible GPS receiver connected!

- See Also
- Reading the display in GPS mode
  - Main GPS display
  - Location alert display
  - Location review display
- Key operation in GPS mode

See Also

GPS mode is only one small part of location-based scanning. For more information on using your scanner with a GPS receiver, see the following links:

Location-based Scanning contains

- an overview of why you might want to use a GPS receiver with your scanner
- an explanation of two different approaches to location-based scanning
- some information on fining antenna locations

Programming locations contains

- details on how to program locations for systems, sites, and channels
- details on how to program Points of Interest (*POI*), Dangerous Roads, and Dangerous Intersections (*Dangerous Xing*)
- information on reviewing and editing locations

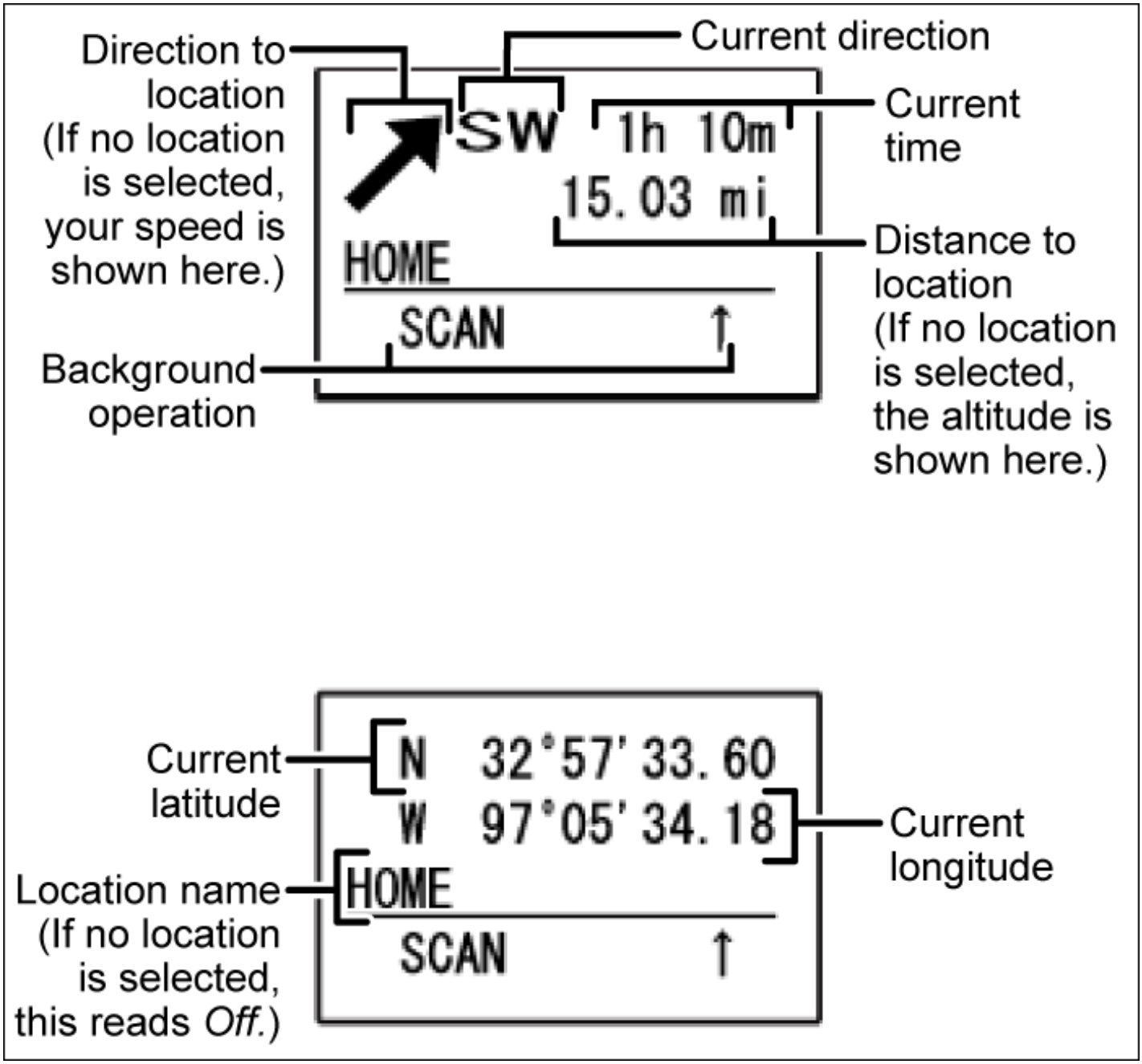
Connecting a GPS receiver contains

- details on which GPS receivers are compatible
- instructions on connecting a GPS receiver
- troubleshooting tips if you can't the receiver working with the scanner

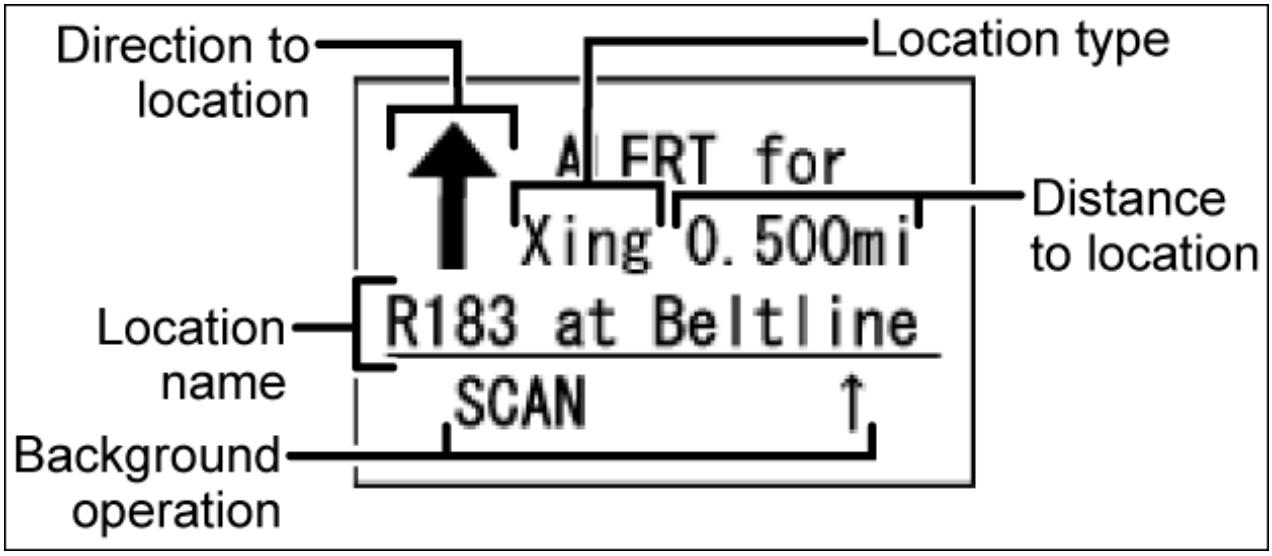
Reading the display in GPS mode

There are several displays available in GPS mode.

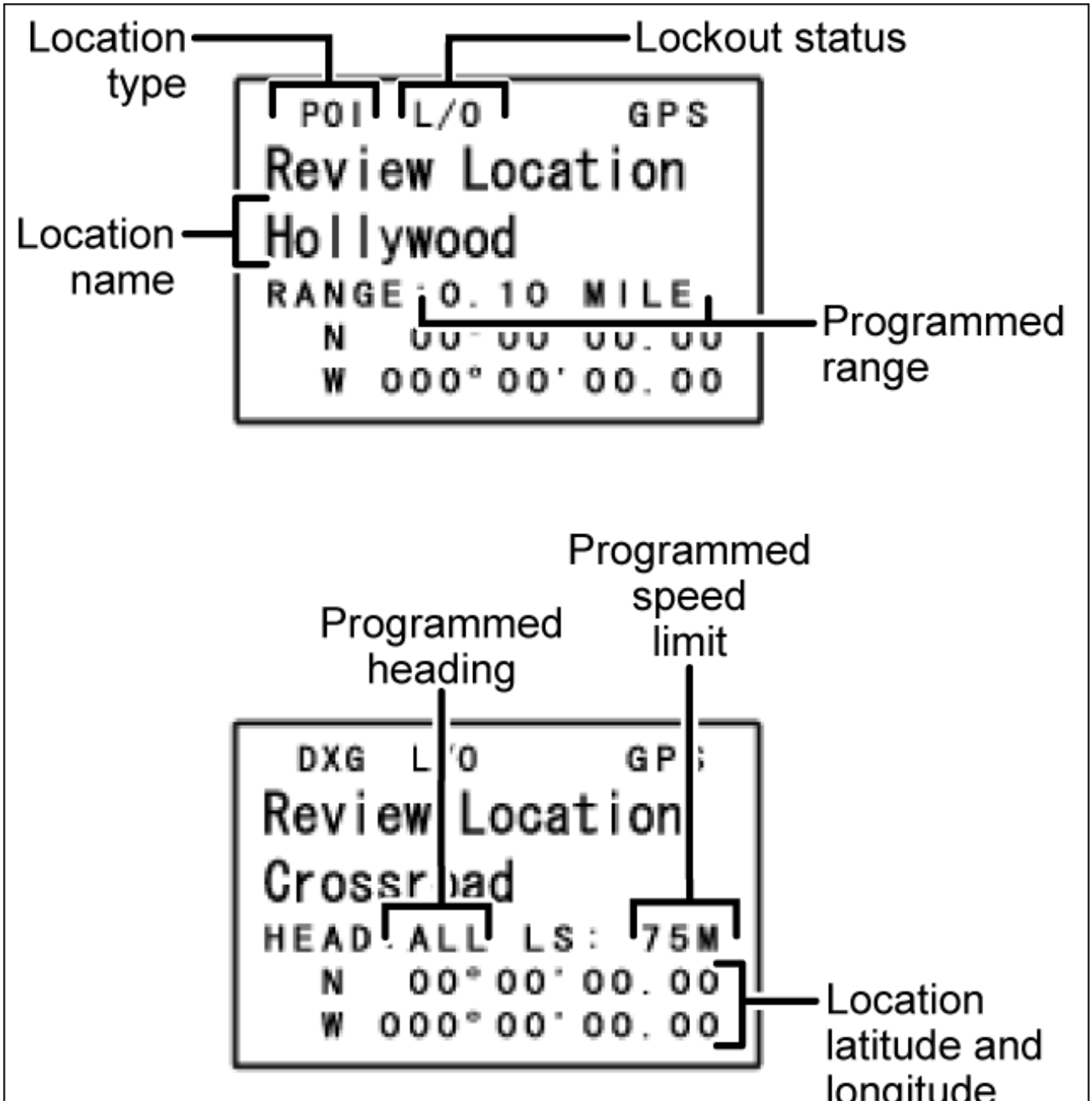
Main GPS display

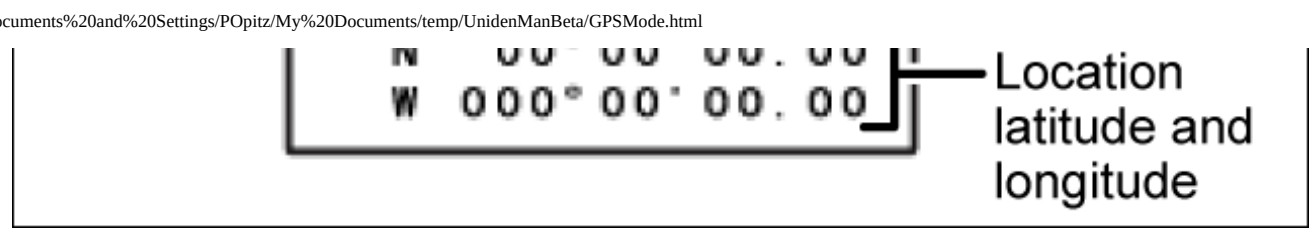


Location alert display

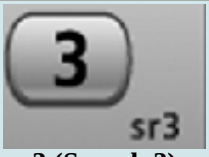
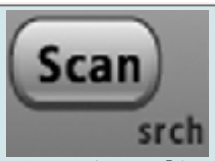
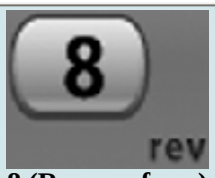


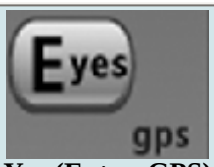
Location review display





Key operation in GPS mode

Key Name (2nd operation) **Action on:**	 **Hold (Close call)**	 **1 (Search 1)**	 **2 (Search 2)**	 **3 (Search 3)**
Tap	Toggle Hold mode on the scan or search running in the background. When reviewing locations: Enter Scan Hold mode.	NA	NA	NA
Key Name (2nd operation) **Action on:**	 **Scan (Search)**	 **4 (IF exchange)**	 **5 (Volume offset)**	 **6 (Display mode)**
Tap	Return to previous operation. When reviewing locations: Enter Scan mode.	NA	NA	NA
FUNCTION + Tap	NA	NA	NA	Cycle through the available displays.
Key Name (2nd operation) **Action on:**	 **Lockout**	 **7 (Attenuation)**	 **8 (Reverse freq.)**	 **9 (Modulation)**
Tap	Temporarily lockout the current Location Alert. When reviewing locations: Toggle the Lockout status of the current location.	NA	NA	NA
Double Tap	Permanently lockout the current Location Alert.	NA	NA	NA

Press & hold	When reviewing locations: Unlock all locations of the current type (POI, Dangerous Road or Crossing).	NA	NA	NA
FUNCTION + Press & hold	When reviewing locations: Unlock all locations regardless of type.	NA	NA	NA
Key Name (2nd operation) **Action on:**	 **Backlight (Power, Lock)**	 **No (Decimal, Priority)**	 **0 (Weather)**	 **Yes (Enter, GPS)**
Tap	Turn on the LCD backlight.	During a system message: Cancel the message and exit that screen. When reviewing locations: Close the location review list.	NA	Open the location review location list. When reviewing locations: Edit the selected location.
Press & hold	Turn the scanner on or off.	NA	NA	NA
FUNCTION + Tap	Lock or unlock the keypad.	NA	NA	NA
FUNCTION + Press & hold	NA	NA	NA	When reviewing locations: Replace the select location's coordinates with the coordinates of your current position.

This page applies to the following scanner(s): BCD396XT BC346XT Users Guide